FLOOD INSURANCE STUDY

VANDERBURGH COUNTY, INDIANA
AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
DARMSTADT, TOWN OF	180629
EVANSVILLE, CITY OF	180257
VANDERBURGH COUNTY (UNINCORPORATED AREAS)	180256

REVISED PRELIMINARY
MAY 15, 2009

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
18163CV000A

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

Part or all of this FIS may be revised and republished at any time. In addition, part of this FIS may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS components.

Selected Flood Insurance Rate Map panels for this community contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g., floodways and cross sections). In addition, former flood hazard zone designations have been changed as follows.

Old Zone(s)	New Zone
A1 through A30	AE
V1 through V30	VE
B	X
C	X

Initial Countywide FIS Effective Date:

Revised Countywide FIS Date:

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FLOOD INSURANCE STUDY
VANDERBURGH COUNTY, INDIANA AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This countywide Flood Insurance Study (FIS) investigates the existence and severity of flood hazards in, or revises and updates previous FISs/Flood Insurance Rate Maps (FIRMs) for the geographic area of Vanderburgh County, Indiana, including: the City of Evansville, the Town of Darmstadt, and the unincorporated areas of Vanderburgh County (hereinafter referred to collectively as Vanderburgh County).

This FIS aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This FIS has developed flood risk data for various areas of the county that will be used to establish actuarial flood insurance rates. This information will also be used by Vanderburgh County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and will also be used by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the NFIP are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some States or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this FIS are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

This FIS was prepared to include all jurisdictions within Vanderburgh County in a countywide FIS. Information on the authority and acknowledgments for each jurisdiction included in this countywide FIS, as compiled from their previously printed FIS reports, is shown below.

Evansville, City of:	the hydrologic and hydraulic analyses from the FIS report dated April 15, 1981, were prepared by the U.S. Army Corps of Engineers (USACE), Louisville District, for the Federal Insurance Administration (FIA), under Inter-Agency Agreement No. IAA-H-15-72, Project Order No. 7. That work was completed in January 1973 and revised in 1979, where necessary.

Vanderburgh County (Unincorporated Areas):	for the FIS report dated March 19, 1982, the hydrologic and hydraulic analyses were performed by the USACE for the FIA under Inter-Agency Agreement No. IAA-H-15-72, Project Order No. 7. That work was completed in April 1973, covered the Ohio River and Pigeon Creek. Approximate flood boundaries for the other streams in the county were determined in September 1975 by Dames & Moore, under contract to the FIA. For the FIS report dated August 5, 1991, the hydrologic and hydraulic analyses were performed by the USACE, Louisville District.

There was no effective FIS report for the Town of Darmstadt prior to this county-wide FIS.

For this countywide FIS, revised hydrologic and hydraulic analyses were prepared by the USACE, Louisville District, for FEMA, under an Inter-Agency Agreement No. EMW-96-IA-0195, Task No. LMMP-R5-96-02. This work was completed in May 1998. The hydrologic and hydraulic analysis for Bluegrass Creek was taken from the FIS for Warrick County, Indiana. Also, hydrologic and hydraulic analyses prepared by V3 Engineering, Inc., for Harper Ditch and its tributaries and Upper and Lower Dry Run, completed on July 18, 2001, have been incorporated as part of this FIS after being reviewed and accepted by FEMA.

Base map information was derived from digital orthophotography collected by the U.S. Department of Agriculture Farm Service Agency under its National Agricultural Farm Imagery Program (NAIP). This imagery was flown in 2005 and was produced with a 1-meter ground sample distance. Planimetric base map information was also provided in digital format by Evansville-Vanderburgh County, Indiana Department of Buildings. These files were photogrammetrically compiled at scales of 1:7,920 from aerial photography dated March 2000. Additional information was derived from U.S. Geological Survey (USGS) Digital Line Graphs. Additional information may have been derived from other sources. Users of the FIRM should be aware that minor adjustments may have been made to specific base map features.

The projection used for the production of the FIRM is Universal Transverse Mercator (UTM) zone 16. The horizontal datum was NAD 83, GRS80 spheroid.

1.3 Coordination

Consultation Coordination Officer's (CCO) meetings may be held for each jurisdiction in this countywide FIS. An initial CCO meeting is held typically with

representatives of FEMA, the community, and the study contractor to explain the nature and purpose of a FIS, and to identify the streams to be studied by detailed methods. A final CCO meeting is held typically with representatives of FEMA, the community, and the study contractor to review the results of the study.

The dates of the initial and final CCO meetings held for Vanderburgh County and the incorporated communities within its boundaries are shown in the following tabulation.

Community	Initial CCO Date	Final CCO Date
Evansville, City of	*	December 22, 1979
Vanderburgh County (Unincorporated Areas)	*	August 11, 1976

*Data not available

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Vanderburgh County, Indiana.

All or portions of the flooding sources listed in Table 1, "Flooding Sources Studied by Detailed Methods," were studied by detailed methods. Limits of detailed study are indicated on the Flood Profiles (Exhibit 1) and on the FIRM (Exhibit 2).

TABLE 1 - FLOODING SOURCES STUDIED BY DETAILED METHODS

Bluegrass Creek
Boeshce Ditch
Burkhardt Ditch
Crawford-Brandeis Ditch
Southern Railroad Embankment Ditch
Dry Run Lower
Dry Run Upper
Greenbriar Hills Tributary
Harper Ditch
Little Pigeon Creek
Locust Creek
Mill Road Tributary
Nurenbern Ditch
Ohio River
Pigeon Creek
Pond Flat Ditch
Pond Flat Ditch Lateral “A”
Pone Flat Ditch Lateral “B”
Pond Flat Ditch Lateral “C”
Rusher Creek
Pond Flat Ditch Lateral “D”
Pond Flat Ditch Lateral “E”
Schlensker Ditch
Schlensker Ditch Tributary
Stockfleith Ditch

For this revision, limits of detailed study for the newly studied or revised streams are shown in Table 2, "Scope of Revision."

TABLE 2 - SCOPE OF REVISION

Stream	Limits of Revised or New Detailed Study
Bluegrass Creek	
Burkhardt Ditch	From confluence with Southern Railroad Embankment Ditch to a point approximately 8,600 feet upstream its confluence
Crawford-Brandeis Ditch	From a point approximately 2,980 feet upstream of Green River Court to the confluence of Harper Ditch
Southern Railroad Embankment Ditch	From the confluence of Harper Ditch to a point approximately 4,500 feet upstream of Burkhardt Road
Dry Run Lower	From the confluence with Pigeon Creek to 1st Avenue
Dry Run Upper	From the confluence with Dry Run Lower to a point approximately 1,500 feet upstream of Cross Gate Drive
Greenbriar Hills Tributary	From the confluence with Little Pigeon Creek to a point approximately 800 feet upstream of Greekdale Drive
Harper Ditch	From the confluence with Pigeon Creek to a confluence of Stockfleith Ditch
Mill Road Tributary	From the confluence with Little Pigeon Creek to a point approximately 1,200 feet upstream of Christ Road
Nurenbern Ditch	From the confluence with Southern Railroad Embankment Ditch to a point approximately 200 feet upstream of Lloyd Expressway

TABLE 2 - SCOPE OF REVISION - continued

Stream	Limits of Revised or New Detailed Study
Ohio River	From the county boundary to a point approximately 4,000 feet east of intersection of Old Green River Road and River side Drive
Pigeon Creek	From the confluence with the Ohio River to upstream of county boundary
Schlensker Ditch	From the Highway 57 bridge to a point approximately 2,000 feet upstream of Browning Road
Schlensker Ditch Tributary	From the confluence with Schlensker Ditch to just downstream of Schlensker Road
Stockfleith Ditch	From the confluence with Harper Ditch to a point approximately 400 feet upstream of Lloyd Expressway

The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction.

Numerous flooding sources in the county were studied by approximate methods. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and Vanderburgh County.

2.2 Community Description

Vanderburgh County is rectangular in shape, with the long side of the rectangle oriented in a north-south direction. The county is located in the southwest corner of the state and encompasses 241 square miles, with the southern edge bordered by a 36-mile stretch of the Ohio River. According to the U.S. Census Bureau, the 2000 population was 171,922.

Annual precipitation varies widely, ranging from 26 inches to 63 inches; the average annual precipitation is in excess of 40 inches.

Mill Road Tributary is within the corporate limits of the City of Evansville in the north part of the city, southwest of the airport. The lower half mile of the stream has no development in the 1-percent annual chance floodplain but has residential and some nonresidential development in the 0.2-percent annual chance floodplain.

There is no development in the middle part of the study area and residential development in the upper portion of the stream. Schlensker Ditch and its tributary and Greenbriar Hills Tributary are both in Vanderburgh County, to the north of the corporate limits of the City of Evansville. There is practically no development in the Schlensker Ditch and tributary study area. The lower half mile of the Greenbriar Hills Tributary has no development; the upper portion is developed residentially.

2.3 Principal Flood Problems

During this century, there have been numerous damaging floods in Vanderburgh County, the most destructive ones occurring in 1937, 1961, and 1964. Portions of the county can be flooded by Ohio River backwater alone, by Pigeon Creek headwater, or by a combination of both.

Damage from flooding along Pigeon Creek in the study area occurs when the Ohio River reaches a stage great enough to back water up Pigeon Creek, or when Pigeon Creek headwater becomes sufficiently high enough to overflow the channel. Because of continued development in the unprotected areas, flood problems are now considered greater than at the time of the 1937 flood. The flooding problem now consists principally of overflow from Pigeon Creek onto the agricultural lands in the eastern part of Vanderburgh County and residential sections northeast of Evansville. Suffering the greatest damage in more recent headwater floods on Pigeon Creek were the homes and farm buildings in the North Green River Road area. In addition to flooding on Pigeon Creek, floods on the Ohio River cause extensive overflow in the southeastern corner of the country. Because of the meandering nature of the river, this portion of the county lies almost entirely in the floodplain of the river.

There are no available discharge and recurrence interval data for historical flood events. Also, no gaged stream data exist within the study area. Backwater flooding from Pigeon Creek aggravates the flood problems on Mill Road Tributary. While there is also potential backwater flooding on both Schlensker Ditch and Greenbriar Hills Tributary, it is not as significant as that on Mill Road Tributary.

2.4 Flood Protection Measures

Following the 1937 Ohio River flood, the City of Evansville, in conjunction with the Louisville District of the USACE, initiated flood protection projects. Portions of the riverfront area are now protected from severe flooding by levees, floodwalls, and large pumps. There is also a levee system to help control flooding on Pigeon Creek. These provide protection to the city and portions of the unincorporated areas east of the city from a repetition of the 1937 flood, which had a recurrence interval greater than 500 years.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the county, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this FIS. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the county at the time of completion of this FIS. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for the flooding sources studied in detail affecting the county.

Precountywide Analyses

The City of Evansville and the unincorporated areas of Vanderburgh County have previously printed FIS reports. Unit hydrograph data for Pigeon Creek were based on recorder gage data available from the USGS gage (mile 7.18). The hydrologic analyses described in those reports have been compiled and are summarized below.

For Pigeon Creek, floodflow frequency data were based on statistical analysis of stage discharge records at the gaging station (River Mile 7.18) operated by the USGS. This analysis followed the standard log-Pearson Type III method outlined by the U.S. Water Resources Council (U.S. Water Resources Council, 1967) and methods contained in Statistical Methods in Hydrology (Beard, 1962). Also, from the gaging station records, unit hydrograph data were developed for the creek.

Unit hydrographs were not developed for the Ohio River. Frequency-discharge data for the Ohio River were developed from the discharge records at the gaging station in Evansville as modified by the 1968 Group "A" Reservoirs, which included reservoirs completed, under construction, and in advanced planning in 1968.

Countywide Analyses

Information on the methods used to determine peak discharge-frequency relationships for the streams restudied as part of this countywide FIS is shown below.

No existing USGS gaging stations are located on Pond Flat Ditch or its tributaries. Therefore, a regional study using surrounding USGS gaging stations was performed to develop a discharge-drainage area frequency curve. Flood flow frequency data at all gages were determined by using USGS Bulletin 17B (U.S. Department of the Interior, 1981). In addition, an analysis using the SCS Unit Hydrograph Method for surrounding basins has been performed for a previous study and is incorporated into this regional frequency curve. This method is based on a dimensionless hydrograph, with drainage area, duration of rainfall, and time to peak as parameters needed for this analysis.

No existing USGS gaging stations are located within the study area for Mill Road Creek, Greenbriar Hills Tributary, Schlensker Ditch, and Schlensker Ditch Tributary; therefore, frequency discharges were determined by use of "HEC-1 Flood Hydrograph Package." These 3 HEC-1 models for the study tributaries were subdivided into 3 subbasins for Mill Road Tributary, 6 subbasins for Greenbriar Hills Tributary, and 7 subbasins for the Schlensker Ditch, and Schlensker Ditch Tributary to better define the flow regime. Soil Conservation Service (SCS) curve numbers based on drainage characteristics of soil group and land use, drainage area, time of concentration, and rainfall excess were used to compute flow for each subbasin within each HEC-1 model. Soil type was determined from the Vanderburgh County soil maps while land use was based on field observation of the drainage basins. The SCS dimensionless unit hydrograph and loss rate curve numbers were applied in the 15-minute/6-hour HEC-1 basin model. Precipitation amounts were obtained from Technical Paper 40 "Rainfall Frequency Atlas of the United States," dated May 1961, and National Oceanic and Atmospheric Administration (NOAA) Technical Memorandum NWS HYDRO-35 "Five- to 60-Minute Precipitation Frequency For the Eastern and Central United States," dated June 1977. These data were extrapolated to obtain the 0.2-percent annual chance exceedence rainfall values.

No existing USGS gaging stations are located on Bluegrass Creek or its tributaries. Therefore, a regional study using surrounding USGS gaging stations was performed to develop a discharge-drainage area frequency curve. Flood-flow frequency data at all gages were determined using USGS guidelines (U.S. Department of the Interior, 1982). In addition, an analysis using the SCS unit-hydrograph method for surrounding basins, available from a previous study, was incorporated into this regional frequency study. The SCS method is based on a dimensionless unit hydrograph with drainage area, duration of rainfall, and time to peak as parameters.

Natural discharge frequency values for Pigeon Creek were developed in accordance with methods presented in papers by Leo R. Beard, Statistical Methods in Hydrology (1962). An in-depth study was made of available stream gages within

the study area in accordance with the Water Resources Council, Bulletin 17B. The Pigeon Creek at Evansville gaging station, with 25 years of record (1961 through 1985) and a drainage area of 323 square miles, was utilized as the base for all subsequent discharge evaluations. The Pigeon Creek gage was located on the Oak Hill Road bridge at stream mile 7.17. Determination of the discharge versus exceedence probabilities considered omission of low and high outliers, weighting with a regionalized skew and historically adjusting the preliminary results where possible. Previous studies for adjacent areas, with similar runoff characteristics, were examined to assure reasonableness of the adopted values. Final discharge frequency values for Pigeon Creek are shown in Table 3.

The discharge values utilized in this current study have been updated and reflect only a minor adjustment to previous values of Pigeon Creek. Upper and Lower Dry Run, Harper Ditch, Crawford-Brandeis, Stockfleith Ditch, Burkhardt Ditch, and Nurenbern Ditch drainage areas were delineated on USGS quadrangle maps based on the drainage area maps furnished by Indiana Department of Natural Resources (IDNR). The drainage areas were then subdivided into smaller drainage subbasins on these topographic maps. Computations of input parameters for HEC-1 modeling were determined as follows:

- Channel data such as channel length, slope, shape, bottom width, and side slopes, were based on actual field survey measurements.

- Subbasin characteristics such as drainage area, overland flow length, and slope, were computed using USGS quadrangle maps.

- Weighted runoff curve numbers (CN) were determined based on guidelines of the U.S. Department of Agriculture, SCS.

HEC-1 modeling was prepared incorporating the following items:

- Bulletin 71 (HUFF) for rainfall;
- Bulletin 71 (HUFF) for rainfall distribution;
- SCS Unit Hydrograph Method; and
- Modified Puls from HEC-2 Modeling for routing.

Interconnectivity of subbasins was established and a schematic diagram of the stream network for HEC-1 modeling was prepared. Each subbasin was then modeled to establish the peak discharge-frequency relationship for floods of selected recurrence intervals of 10-, 4-, 2-, and 1-percent annual chance. The HEC-1 estimated peak discharges were compared with the peak discharges for similar drainage basins in Vanderburgh and Warrick Counties, Indiana (Basin 25, Pigeon and Little Pigeon Creeks: Boonville, Warrick County FIS, Evansville Special Flood Hazard Area [SFHA]), as published in Coordinated Discharges of Selected Streams in Indiana by IDNR, Division of Water, dated 1993. It was determined that the computed discharges are comparable with the published discharges. A summary of the drainage area-peak discharge relationships for all the

streams studied by detailed methods is shown in Table 3, "Summary of Discharges."

TABLE 3 – SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
BLUEGRASS CREEK					
At mouth	44.5	*	*	5,000	*
At North 100 Road	36.2	*	*	4,550	*
At Boonville Road	21.3	*	*	3,550	*
At North 600 Road	7.0	*	*	2,160	*
At CONRAIL	4.8	*	*	1,710	*
At North 750 Road	3.2	*	*	1,470	*
At North 800 Road	2.0	*	*	1,120	*
BURKHARDT DITCH					
At confluence with Southern Railroad Embankment Ditch	1.25	300	479	575	655
CRAWFORD-BRANDEIS DITCH	1.21	480	742	888	1,010
DRY RUN LOWER					
At confluence with Pigeon Creek	2.70	679	1,130	1,377	1,587
DRY RUN UPPER					
At confluence with Dry Run Lower	0.58	146	247	300	346
GREENBRIAR HILLS TRIBUTARY					
At confluence with Little Pigeon Creek	2.00	*	*	2,000	*
At Petersburg Place (mile 0.7)	0.33	*	*	520	*
At Greendale Drive (mile 0.82) (overload flow only)	0.28	*	*	430	*
HARPER DITCH					
At confluence with Pigeon Creek	7.86	873	1,422	1,701	1,935
LITTLE PIGEON CREEK					
At mouth	17.5	1,820	2,710	3,190	4,100
Approximately 0.5 mile downstream of Kentucky Avenue	14.6	1,700	2,520	2,980	3,800

*Data not available

TABLE 3 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
LITTLE PIGEON CREEK (continued)					
Just upstream of Petersburg Road	9.2	1,360	2,010	2,330	3,010
Just downstream of Chicago Eastern Illinois Railroad	5.9	1,100	1,620	1,900	2,470
Approximately 0.2 mile downstream of Hillsdale Road	4.2	920	1,370	1,590	2,050
Just upstream of Hillsdale Road	2.8	780	1,140	1,350	1,720
LOCUST CREEK					
At mouth	17.90	1,780	2,600	3,040	3,950
Approximately 0.65 mile downstream of Illinois Central Railroad	11.78	1,520	2,250	2,620	3,380
Just downstream of Winberg Road	6.81	1,080	1,620	1,900	2,420
MILL ROAD TRIBUTARY					
At Hesmer Road (mile 0.416) (reduced intrabasin flow)	0.59	*	*	245	265
At Weaver Road (mile 0.83)	0.37	*	*	780	1,055
At Christ Road (mile 1.15)	0.22	*	*	555	745
At Inwood Drive (mile 1.26)	0.15	*	*	375	500
NURENBERN DITCH					
At confluence with Southern Railroad Embankment Ditch	1.70	261	433	353	610
OHIO RIVER					
At the Evansville gage at River Mile 792.3	107,000	691,000	*	920,000	*
PIGEON CREEK					
At confluence with Ohio River	368	8,800	13,000	14,200	*
At Oak Hill Road	324	8,250	12,100	13,500	*
At Interstate I-64	260	7,350	10,900	11,900	*

*Data not available

TABLE 3 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
POND FLAT DITCH					
At mouth	19.7	*	*	3,300	*
Just upstream of Lateral C	8.2	*	*	2,200	*
Just upstream of Lateral D	4.2	*	*	1,600	*
Just upstream of Lateral A	1.58	*	*	1,000	*
At U.S. Route 41	1.06	*	*	825	*
POND FLAT DITCH LATERAL "A"					
At mouth	2.47	*	*	1,240	*
Just upstream of Lateral B	1.60	*	*	1,010	*
At U.S. Route 41	1.21	*	*	880	*
POND FLAT DITCH LATERAL "B"					
At mouth	0.60	*	*	630	*
POND FLAT DITCH LATERAL "C"					
At mouth	5.39	*	*	1,800	*
Just upstream of Mosquito Road	4.40	*	*	1,640	*
Just upstream of Princeton Road	3.50	*	*	1,480	*
RUSHER CREEK					
At mouth	1.68	*	*	1,030	*
POND FLAT DITCH LATERAL "D"					
At mouth	1.52	*	*	980	*
SCHLENSKER DITCH					
At State Highway 57 (mile 1.51)	5.6	*	*	5,590	6,775
At Petersburg Road Bridge (mile 2.667)	3.8	*	*	4,350	5,550
At Browning Road Bridge (mile 4.349)	0.7	*	*	875	1,185
SCHLENSKER DITCH TRIBUTARY					
At confluence with Schlensker Ditch	1.8	*	*	1,930	2,460

*Data not available

TABLE 3 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
STOCKFLEITH DITCH					
At confluence with Harper Ditch	0.77	195	335	410	471

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the source studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data tables in the FIS report. For construction and/or floodplain management purposes, users are encouraged to use the flood elevation data presented in this FIS in conjunction with the data shown on the FIRM.

Cross sections were determined from topographic maps and field surveys. All bridges, dams, and culverts were field surveyed to obtain elevation data and structural geometry. All topographic mapping used to determine cross sections is referenced in Section 4.1.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the FIRM (Exhibit 2).

The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

Qualifying bench marks within a given jurisdiction that are cataloged by the National Geodetic Survey (NGS) and entered into the National Spatial Reference System (NSRS) as First or Second Order Vertical and have a vertical stability classification of A, B, or C are shown and labeled on the FIRM with their 6-character NSRS Permanent Identifier.

Bench marks cataloged by the NGS and entered into the NSRS vary widely in vertical stability classification. NSRS vertical stability classifications are as follows:

- Stability A: Monuments of the most reliable nature, expected to hold position/elevation well (e.g., mounted in bedrock)

- Stability B: Monuments which generally hold their position/elevation well (e.g., concrete bridge abutment)

- Stability C: Monuments which may be affected by surface ground movements (e.g., concrete monument below frost line)

- Stability D: Mark of questionable or unknown vertical stability (e.g., concrete monument above frost line, or steel witness post)

In addition to NSRS bench marks, the FIRM may also show vertical control monuments established by a local jurisdiction; these monuments will be shown on the FIRM with the appropriate designations. Local monuments will only be placed on the FIRM if the community has requested that they be included, and if the monuments meet the aforementioned NSRS inclusion criteria.

To obtain current elevation, description, and/or location information for bench marks shown on the FIRM for this jurisdiction, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their Web site at www.ngs.noaa.gov.

It is important to note that temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the Technical Support Data Notebook associated with this FIS and FIRM. Interested individuals may contact FEMA to access this data.

Precountywide Analyses

The City of Evansville and the unincorporated areas of Vanderburgh County have previously printed FIS reports. The hydraulic analyses described in those reports have been compiled and are summarized below.

Cross-section data for Pond Flat Ditch and its tributaries were obtained from field survey data and detailed mapping developed from aerial photography for Vanderburgh County. For the Ohio River, cross sections were determined from detailed topographic aerial maps. For the remaining streams, cross sections were located at bridges and at close intervals above and below bridges in order to compute the backwater effects of these structures. Natural ground sections were also obtained at points between bridges. Areas that would be ineffective in conveying water downstream were not included. Locations of selected cross sections used in the hydraulic analyses are shown in Exhibit 1.

Water-surface elevations of floods of the selected recurrence intervals were computed through the use of the USACE HEC-2 step-backwater computer program (U.S. Department of the Interior, 7.5-Minute Topographic Quadrangle Maps). This program considers the effect of various hydraulic structures such as bridges, culverts, and dams. It applies Bernoulli's theorem for the total energy at each cross section and uses Manning's formula to evaluate the head loss between cross

sections. Input requirements include stream cross sections at selected intervals, a starting water-surface elevation for each flood, estimates of roughness coefficients for each stream segment, dimensions of hydraulic structures and the peak discharge for each flood. Starting water-surface elevations for the Ohio River were taken from the detailed analysis of the Ohio River done by the Ohio River Division of the USACE (U.S. Department of the Army, 1966). Starting water-surface elevations for the remaining streams were determined by the slope/area method.

Analyses of the hydraulic characteristics of Little Pigeon and Locust Creeks were prepared in a separate report and provided estimates of the elevations of the 10-, 2-, 1-, and 0.2-percent annual chance flood recurrence intervals.

Countywide Analyses

Information on the methods used to determine peak discharge-frequency relationships for the streams restudied as part of this countywide FIS is shown below.

Analyses of the hydraulic characteristics of the Mill Road, Greenbriar Hills, and Schlensker Ditch tributaries were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Water-surface elevations of the selected floods were computed through the use of the computer program HEC-RAS "River Analysis System." Cross sections for the computer analyses were obtained from field survey data and detailed mapping developed for the City of Evansville. These sections were located at close intervals above and below the bridges in order to compute the backwater effects of the structures. In addition, natural ground sections were obtained at points between bridges. Locations of selected cross sections used in the hydraulic analyses are shown on the flood profiles. For stream segments for which a floodway was computed, selected cross sections are also shown on the flood boundary and floodway map.

Analyses of the hydraulic characteristics of Bluegrass Creek were carried out to provide estimates of the elevation of the 1-percent annual chance flood recurrence interval. Water-surface elevations were computed using the HEC-2 computer program (USACE, 1984). Cross-section data for Bluegrass Creek were obtained from field survey and detailed mapping developed from aerial photography for Warrick County.

An analysis of the hydraulic characteristics of Pigeon Creek was carried out to determine the elevation of the 1-percent annual chance flood. Cross sections were located at regular intervals along Pigeon Creek and at significant changes in ground relief and land use or land cover. A HEC-2 computer model was developed utilizing aerial topographic mapping (1"=200', 5' contour intervals). Bridge geometry was determined from as-built bridge plans and field surveys. Backwater computer models and/or calculations for previous studies could not be

recovered; therefore, water-surface profiles were developed using the HEC-2 computer step-backwater model compiled for this study.

Hydraulic analysis was carried out to estimate the elevations of floods of the selected recurrence intervals along Harper Ditch and its tributaries. Harper Ditch includes Crawford-Brandeis Ditch, Stockfleith Ditch, Burkhardt Ditch, Nurenbern Ditch, and Upper and Lower Dry Run.

All cross sections for the backwater analysis were field surveyed and were located at close intervals upstream and downstream of bridges and culverts to compute significant backwater effects due to these structures.

Aerial photogrammetric maps, prepared by Atlantic Aerial Surveys, Inc., dated 1990, at 1"=200' scale and 5' contour interval were obtained from the Vanderburgh County Surveyor's Office. Field cross sections were then plotted onto these maps and extended into floodplain to obtain required topographic data beyond field survey limits.

Necessary dimensions and elevations of all hydraulic structures were obtained through field survey measurements. These data were then used in defining the structure shape, stations, and elevations for HEC-2 modeling.

Starting water-surface elevations for Harper Ditch and Upper and Lower Dry Run for selected recurrence intervals were computed using the slope/area method since no known water-surface elevations for this stream are available from other sources. Starting water-surface elevations for the tributaries of Harper Ditch were also computed using the slope/area method to avoid wide floodway.

Starting water-surface elevations for Upper Dry Run were derived from Lower Dry Run flood profiles.

Peak discharges for the 10-, 4-, 2-, and 1-percent annual chance floods were taken from approved HEC-1 modeling for Harper Ditch and its tributaries in the City of Evansville, Vanderburgh County, Indiana. Peak discharges for Upper and Lower Dry Run were taken from final discharge drainage area frequency curve.

Initially, the floodway calculations for 1-percent annual chance flood frequency were based on equal loss of conveyance on opposite sides of the stream (Encroachment Method 4 of HEC-2). However, due to unusual flow patterns, uneven floodway boundaries and surcharge elevations in excess of the maximum 0.14 foot as allowable by IDNR, fixed encroachments were specified at selected cross sections (Encroachment Method 1 of HEC-2).

The boundaries of the 1-percent annual chance flood (floodplain) were delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using aerial photogrammetric maps at a scale of 1"=200', with a contour interval of 5 feet.

The floodway boundaries of the 1-percent annual chance flood were determined based on 0.14 foot maximum surcharge criteria, as set down by the Indiana Flood Control Act of 1945 and the Natural Resources Commission Policy Guidelines, Section 6, adopted March 28, 1974. The floodways were determined by sound engineering judgment based on trial and error computations to match the known profiles.

The floodway boundaries were delineated at each cross section; between cross sections, the boundaries were interpolated. In cases where the boundaries of the floodway and the 1-percent annual chance flood are either close together or collinear, only the floodway boundary has been shown.

Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

Roughness factors (Manning's "n") used in the hydraulic computations were chosen by engineering judgments and were based on field observations of the stream channels and overbank floodplain areas. The following tabulation shows the channel and overbank "n" values for all the streams studied by detailed methods:

Stream	Channel "n" Values	Overbank "n" Values
Bluegrass Creek	0.04-0.07	0.045-0.08
Burkhardt Ditch	0.013-0.035	0.040
Crawford-Brandeis Ditch	0.035-0.050	0.040-0.060
Dry Run Lower	0.050-0.070	0.070-0.080
Dry Run Upper	0.045-0.050	0.050-0.060
Greenbriar Hills Tributary	0.01-0.06	0.015-0.065
Harper Ditch	0.024-0.055	0.040-0.060
Little Pigeon Creek	0.040-0.065	0.040-0.125
Locust Creek	0.050-0.065	0.045-0.100
Mill Road Tributary	0.02-0.055	0.035-0.07
Nurenbern Ditch	0.024-0.035	0.040
Ohio River	0.024	0.030
Pigeon Creek	0.04-0.065	0.065-0.085
Pond Flat Ditch	0.045	0.045
Pond Flat Ditch Lateral "A"	0.045	0.045
Pond Flat Ditch Lateral "B"	0.045	0.045
Pond Flat Ditch Lateral "C"	0.045	0.045
Pond Flat Ditch Lateral "D"	0.045	0.045-0.070
Pond Flat Ditch Lateral "E"	0.045	0.045
Rusher Creek	0.045	0.045
Schlensker Ditch	0.05-0.065	0.045-0.065
Schlensker Ditch Tributary	0.05-0.065	0.045-0.065
Stockfleith Ditch	0.035	0.040

3.3 Vertical Datum

All FISs and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum in use for newly created or revised FISs and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD 29). With the finalization of the North American Vertical Datum of 1988 (NAVD 88), many FIS reports and FIRMs are being prepared using NAVD 88 as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NGVD 29. Structure and ground elevations in the community must, therefore, be referenced to NGVD 29. It is important to note that adjacent communities may be referenced to NAVD 88. This may result in differences in base flood elevations across the corporate limits between the communities.

Prior versions of the FIS report and FIRM were referenced to NGVD 29. When a datum conversion is effected for an FIS report and FIRM, the Flood Profiles, and Base Flood Elevations (BFEs) reflect the new datum values. To compare structure and ground elevations to 1-percent annual chance flood elevations shown in the FIS report and on the FIRM, the subject structure and ground elevations must be referenced to the new datum values.

As noted above, the elevations shown in the FIS report and on the FIRM for Vanderburgh County are referenced to NAVD 88. Ground, structure, and flood elevations may be compared and/or referenced to NGVD 29 by applying a standard conversion factor. The conversion factor to NGVD 29 is +0.33 factor. The BFEs shown on the FIRM represent whole-foot rounded values. For example, a BFE of 382.4 will appear as 382 on the FIRM and 382.6 will appear as 383. Therefore, the datum conversion should be applied to the BFEs shown on the Flood Profiles and supporting data tables in the FIS report, which are shown at a minimum to the nearest 0.1 foot.

NAVD 88 + 0.33 feet = NGVD 29

For more information on NAVD 88, see Converting the National Flood Insurance Program to the North American Vertical Datum of 1988, FEMA Publication FIA-20/June 1992, or contact the Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Rockville, Maryland 20910 (Internet address http://www.ngs.noaa.gov).

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. To assist in this endeavor, each FIS provides 1-percent annual chance floodplain data, which may include a combination of the following: 10-, 2-, 1-, and 0.2-percent

annual chance flood elevations; delineations of the 1- and 0.2-percent annual chance floodplains; and 1-percent annual chance floodway. This information is presented on the FIRM and in many components of the FIS, including Flood Profiles, Floodway Data tables, and Summary of Stillwater Elevation tables. Users should reference the data presented in the FIS as well as additional information that may be available at the local community map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent annual chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance flood is employed to indicate additional areas of flood risk in the county. For the streams studied in detail, the 1- and 0.2-percent annual chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries for Ohio River and Pigeon Creek were interpolated using topographic maps at a scale of 1:7,200 with a contour interval of 5 feet (U.S. Department of the Army, 1969); the boundaries for the remaining streams were interpolated using topographic maps at a scale of 1:24,000, with a contour interval of 10 feet (U.S. Department of the Interior, 7.5-Minute Topographic Quadrangle Maps), and 1:7,200 with a contour interval of 2.5 feet (U.S. Department of the Army, 1966).

The 1-percent annual chance flood boundaries for Little Pigeon Creek were delineated on the detailed topographic maps mentioned above, using flood data provided in a state survey report on the Little Pigeon Creek Basin. The boundaries for the other approximate-study streams were adopted from the Flood Hazard Boundary Map for the City of Evansville (State of Indiana, Flood Hazard Area Maps for Vanderburgh County).

For streams studied by approximate methods, the boundary of the 1-percent annual chance flood was based on flood hazard area maps supplied by the Indiana State Department of Water Resources (State of Indiana, Flood Hazard Area Maps for Vanderburgh County).

The 1- and 0.2-percent annual chance floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 1-percent annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE), and the 0.2-percent annual chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent annual chance floodplain boundaries are close together, only the 1-percent annual chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 1-percent annual chance floodplain boundary is shown on the FIRM (Exhibit 2).

4.2 Floodways

This Revisions Description incorporates the results of the floodways analyses for Burkhardt Ditch, Crawford-Brandeis Ditch, Southern Railroad Embankment Ditch, Dry Run Lower, Dry Run Upper, Greenbrair Hills Tributary, Harper Ditch, Mill Road Tributary, Nurenbern Ditch, Pigeon Creek, Pond Flat Ditch, Pond Flat Ditch Lateral "A", Pond Flat Ditch Lateral "B", Pond Flat Ditch Lateral "C", Pond Flat Ditch Lateral "D", Pond Flat Ditch Lateral "E", Rusher Creek, Schlensker Ditch, Schlensker Ditch Tributary, and Stockfleith Ditch.

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent annual chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent annual chance flood can be carried without substantial increases in flood heights.

The State of Indiana, however, per Indiana Code IC 14-28-1 and Indiana Administrative Code 312 IAC 10, has designated that encroachment in the floodplain is limited to that which will cause no significant increase in flood height. As a result, floodways for this study are delineated based on a flood surcharge of less than 0.15 feet. The floodways in this study were approved by the IDNR, and are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this FIS were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain.

Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections (Table 4). The computed floodways are shown on the FIRM (Exhibit 2). In cases where the floodway and 1-percent annual chance floodplain boundaries are either close together or collinear, only the floodway boundary is shown.

At the time the Ohio River was studied, Indiana law did not permit a rise in water-surface elevations along streams; therefore, no floodways were computed for the Ohio River. Also, due to the scope of the previously effective FISs for the City of Evansville and Vanderburgh County, a floodway was not determined for Little Pigeon Creek, Locust Creek, and a portion of Pigeon Creek upstream of I-64.

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body. Therefore,

"Without Floodway" elevations presented in Table 4 for certain downstream cross sections of Burkhardt Ditch, Crawford-Brandeis Ditch, Southern Railroad Embankment Ditch, Dry Run Lower, Dry Run Upper, Greenbriar Hills Tributary, Harpeth Ditch, Mill Road Tributary, Nurenbern Ditch, Pigeon Creek, Pond Flat Ditch Lateral "A," Pond Flat Ditch Lateral "C," and Stockfleith Ditch are lower than the regulatory flood elevations in that area, which must take into account the 100-year flooding due to backwater from other sources.

Encroachment into areas subject to inundation by floodwaters having hazardous velocities aggravates the risk of flood damage, and heightens potential flood hazards by further increasing velocities. A listing of stream velocities at selected cross sections is provided in Table 4, "Floodway Data." In order to reduce the risk of property damage in areas where the stream velocities are high, the community may wish to restrict development in areas outside the floodway.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Bluegrass Creek								
A	4,382.4[2]	505	2,238	2.0	384.4	372.0[5]	372.1	0.1
B	8,342.4[2]	390	2,240	2.0	384.7	374.9[5]	374.8	0.0
C	14,361.6[2]	1,252[4]	3,585	1.3	384.7	380.8[5]	380.8	0.1
D	16,843.2[2]	2,776[4]	9,004	0.5	384.7	381.0[5]	381.0	0.1
E	21,384.0[2]	3,058[4]	6,625	0.5	384.7	381.9[5]	381.8	0.0
F	23,496.0[2]	2,072[4]	2,603	1.4	384.7	382.4[5]	382.3	0.0
G[7]	27,806.4[2]	2,260	2,673	1.2	384.7	384.7	384.8	0.1
H[6]	29,462.4[2]	2,097	2,513	1.3	386.4	386.4	386.5	0.1
I[6]	31,574.4[2]	1,639	2,249	1.0	387.4	387.4	387.5	0.1
Boesche Ditch								
A	534[3]	240	723	1.8	384.2[8]	372.6	372.7	0.0
B	2,603[3]	231	686	1.9	384.9[8]	376.1	376.2	0.1
C	3,337[3]	176	424	3.1	385.1[8]	376.7	376.8	0.1
D[1]	5,115[3]	N/A	N/A	N/A	385.5[8]	379.1	N/A	N/A
E[1]	6,216[3]	N/A	N/A	N/A	385.7[8]	380.3	N/A	N/A
F[1]	7,137[3]	N/A	N/A	N/A	385.9[8]	381.1	N/A	N/A

[1]Drainage area less than one square mile
[2]Feet above confluence with Pigeon Creek
[3]Feet above confluence with Crawford-Brandeis Ditch
[4]This width extends beyond county
[5]Elevation computed without consideration of overflow effects from Pigeon Creek
[6]Floodway located entirely outside of county boundary
[7]Cross section not shown on map, computed outside county boundary
[8] Estimated from pigeon creek profile

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN AND INCORPORATED AREAS

FLOODWAY DATA

BLUEGRASS CREEK – BOESCHE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Crawford- Brandeis Ditch								
A	1,814[1]	231	1,139	2.2	384.1	371.0[2]	371.1	0.1
B	3,309[1]	381	1,621	1.5	384.1	371.8[2]	371.9	0.1
C	4,502[1]	371	1,567	1.6	384.1	372.3[2]	372.4	0.1
D	5,853[1]	198	1,635	0.9	384.1	376.4[2]	376.4	0.1
E	7,365[1]	356	1,878	0.7	384.1	376.4[2]	376.5	0.1
F	8,417[1]	278	1,289	1.1	384.1	376.6[2]	376.6	0.1
G	9,109[1]	115	579	2.4	384.1	377.1[2]	377.2	0.1
H	10,016[1]	215	1,266	1.1	384.1	379.5[2]	379.5	0.0
I	11,449[1]	247	1,235	0.9	384.1	379.7[2]	379.7	0.1
J	14,432[1]	93	348	3.2	384.1	380.8[2]	380.8	0.1
K	15,264[1]	194	929	1.2	384.1	382.1[2]	382.2	0.1
L	16,134[1]	207	864	1.3	384.1	382.2[2]	392.3	0.1
M	17,073[1]	84	349	3.1	384.1	382.5[2]	382.6	0.1

[1]Distance in feet above confluence with Pigeon Creek
[2]Elevation computed without consideration of backwater effects from Pigeon Creek

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN AND INCORPORATED AREAS

FLOODWAY DATA

CRAWFORD-BRANDEIS DITCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Dry Run Lower								
A	3,214[2]	148	576	2.4	377.7	363.1[3]	363.2	0.1
B	4,114[2]	206	603	2.3	377.7	365.0[3]	365.1	0.1
C	4,614[2]	41	271	5.1	377.7	366.5[3]	366.6	0.1
D	5,596[2]	44	308	4.5	377.7	369.7[3]	369.8	0.1
E	5,917[2]	111	732	1.7	377.7	374.7[3]	374.8	0.1
F	7,177[2]	94	659	1.9	377.7	375.0[3]	375.1	0.1
G	7,500[2]	311	938	1.3	377.7	375.4[3]	375.5	0.1
H	8,137[2]	167	670	1.2	377.7	375.5[3]	375.6	0.1
I	8,525[2]	77	478	1.6	377.7	376.4[3]	376.5	0.1
J	9,765[2]	55	256	3.1	377.7	376.9[3]	377.0	0.1
K	10,522[2]	15	76	10.3	377.7	377.7	377.8	0.1
L	10,652[2]	27	90	6.4	381.0	381.0	381.0	0.0

[1]Feet upstream of Green River Court
[2]Feet above confluence with Pigeon Creek
[3]Elevation computed without consideration of backwater effects from Ohio River

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN AND INCORPORATED AREAS

FLOODWAY DATA

DRY RUN LOWER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Dry Run Upper								
A	360	39	126	2.4	377.7	376.6[2]	376.7	0.1
B	560	20	46	6.5	377.7	376.9[2]	377.0	0.1
C	648	18	39	7.6	378.8	378.8	378.8	0.0
D	732	24	71	4.3	380.2	380.2	380.2	0.0
E	858	49	122	2.5	382.1	382.1	382.1	0.0
F	1,008	34	145	2.1	382.3	382.3	382.3	0.0
G	1,333	35	104	2.9	382.7	382.7	382.7	0.0
H	1,657	32	85	3.5	383.7	383.7	383.7	0.0
I	2,057	31	91	3.3	385.1	385.1	385.1	0.0
J	2,456	26	84	3.6	386.4	386.4	386.4	0.0
K	2,623	23	70	4.3	387.4	387.4	387.5	0.1
L	3,247	23	64	4.7	391.0	391.0	391.0	0.0
M	3,871	22	60	5.0	395.1	395.1	395.1	0.0
N	4,268	22	59	5.1	398.5	398.5	398.6	0.1
O	4,882	22	58	5.2	403.2	403.2	403.2	0.0
P	5,497	60	93	3.2	407.2	407.2	407.2	0.0

[1]Feet above confluence with Dry Run Lower
[2]Elevation computed without consideration of backwater effects from Pigeon Creek

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN AND INCORPORATED AREAS

FLOODWAY DATA

DRY RUN UPPER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Greenbriar Hills Tributary								
A	600	411	844	2.4	380.5	378.0[2]	378.1	0.1
B	1,128	414	885	2.3	381.7	379.9[2]	380.0	0.1
C	2,152	106	175	3.3	383.7	383.7	383.8	0.1
D	2,500	87	150	3.8	386.1	386.1	386.2	0.1
E	2,695	94	152	3.7	387.9	387.9	388.0	0.1
F	2,890	120	230	2.5	389.5	389.5	389.6	0.1
G	2,955	127	265	2.2	389.9	389.9	390.0	0.1
H	3,020	55	82	7.0	393.1	393.1	393.1	0.0
I	3,140	260	1,100	0.5	393.8	393.8	393.9	0.1
J	3,420	83	347	1.5	393.8	393.8	393.9	0.1
K	3,650	42	78	6.7	394.0	394.0	394.0	0.0
L	3,865	83	236	2.2	397.3	397.3	397.4	0.1
M	4,075	46	140	3.7	397.5	397.5	397.6	0.1
N	4,335	14	49	10.5	398.1	398.1	398.1	0.0
O	4,517	142	117	3.5	404.7	404.7	404.8	0.1
P	4,817	52	76	5.4	406.6	406.6	406.6	0.0
Q	4,907	48	71	5.7	407.3	407.3	407.3	0.0
R	5,082	40	65	6.3	409.2	409.2	409.3	0.1
S	5,182	44	61	6.7	413.2	413.2	413.2	0.0

[1]Feet above confluence with Little Pigeon Creek
[2]Elevation computed without consideration of backwater effects from Little Pigeon Creek

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN AND INCORPORATED AREAS

FLOODWAY DATA

GREENBRIAR HILLS TRIBUTARY

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Harper Ditch								
A	430[1]	224	561	3.3	381.7	363.5[3]	363.7	0.1
B	1,099[1]	199	582	3.1	381.7	365.3[3]	365.4	0.1
C	1,449[1]	168	503	3.6	381.7	366.2[3]	366.3	0.1
D	1,785[1]	187	465	3.9	381.7	367.3[3]	367.4	0.1
E	2,329[1]	147	449	4.1	381.7	369.1[3]	369.2	0.1
F	3,051[1]	35	216	6.7	381.7	371.8[3]	371.9	0.1
G	3,877[1]	167	670	2.2	381.7	374.7[3]	374.8	0.1
H	4,407[1]	39	325	4.0	381.7	375.1[3]	375.2	0.1
I	4,756[1]	37	223	5.8	381.7	376.1[3]	376.1	0.0
J	5,010[1]	75	277	2.2	381.7	378.5[3]	378.5	0.0
K	5,653[1]	39	243	1.9	381.7	380.3[3]	380.3	0.0
L	6,282[1]	42	232	1.9	381.7	380.4[3]	380.4	0.0
Hirsch Ditch								
A	549[2]	41	220	2.1	381.7	380.6	380.6	0.0
B	1,560[2]	34	191	2.2	381.7	380.8	380.8	0.0
C	1,834[2]	50	321	1.3	385.7	382.1	382.1	0.0
D	2,597[2]	38	198	1.9	385.7	382.3	382.3	0.0
E	3,287[2]	41	207	1.8	385.7	382.5	382.5	0.0
F	4,410[2]	37	207	1.0	385.7	383.4	383.4	0.0
G	5,014[2]	57	284	0.7	385.7	385.2	385.2	0.0
H	5,490[2]	135	505	0.4	385.7	385.3	385.3	0.1

[1]Feet above confluence with Pigeon Creek

[2]Feet above confluence with Harper Ditch

[3]Elevation computed without consideration of backwater effects from Pigeon Creek

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN AND INCORPORATED AREAS

FLOODWAY DATA

HARPER DITCH - HIRSCH DITCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Lockwood Ditch								
A	338	129	576	1.8	385.7	385.3[2]	385.4	0.1
B	1,629	146	559	1.9	385.7	385.6[2]	385.7	0.1
C	2,692	86	312	1.3	385.8	385.8	385.9	0.1
D	3,118	94	460	0.9	385.8	385.8	385.9	0.1
E	3,534	97	332	1.3	385.8	385.8	386.0	0.1
F	4,014	100	373	1.1	386.4	386.4	386.5	0.1
G	5,218	99	552	0.8	386.5	386.5	386.7	0.1
H	5,907	98	518	0.9	386.9	386.9	386.9	0.1
I	6,888	263	7219	0.4	386.9	386.9	387.0	0.1
J	7,821	249	7317	0.4	386.9	386.9	387.0	0.1

[1] Feet above confluence with Crawford-Brandeis Ditch and Hirsch Ditch

[2] Elevations computed without consideration of backwater effects from Hirsch Ditch

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN AND INCORPORATED AREAS

FLOODWAY DATA

LOCKWOOD DITCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Mill Road Tributary								
A	475	236	311	3.3	377.7	365.5[2]	365.6	0.1
B	1,255	213	304	3.3	377.7	368.6[2]	368.7	0.1
C	1,645	54	142	6.7	377.7	370.4[2]	370.5	0.1
D	2,085	30	115	2.1	377.7	372.9[2]	373.0	0.1
E	2,283	55	148	1.7	377.7	373.4[2]	373.5	0.1
F	2,813	18	50	5.0	377.7	374.1[2]	374.1	0.0
G	3,383	40	145	6.0	378.5	378.5	378.6	0.1
H	3,747	123	295	3.0	380.2	380.2	380.3	0.1
I	4,254	42	262	3.1	381.5	381.5	381.6	0.1
J	4,536	231	601	1.3	386.5	386.5	386.5	0.0
K	4,666	137	277	2.6	386.6	386.6	386.6	0.0
L	4,830	75	109	6.6	387.1	387.1	387.1	0.0
M	5,580	50	115	5.6	393.6	393.6	393.7	0.1
N	6,020	26	75	7.7	397.0	397.0	397.1	0.1
O	6,426	70	87	5.3	400.3	400.3	400.3	0.0
P	6,573	89	152	2.4	403.0	403.0	403.0	0.0
Q	6,664	93	172	2.2	404.0	404.0	404.1	0.1
R	6,828	31	91	3.6	404.3	404.3	404.3	0.0
S	7,224	13	33	9.1	407.0	407.0	407.0	0.0

[1]Feet above confluence with Little Pigeon Creek
[2]Elevation computed without consideration of backwater effects from Ohio River

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN AND INCORPORATED AREAS

FLOODWAY DATA

MILL ROAD TRIBUTARY

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Nurenbern Ditch								
A	625	309	263	1.2	386.6	384.4[3]	384.4	0.1
B	1,786	316	272	1.2	386.6	385.3[3]	385.3	0.0
C	2,706	335	559	0.6	386.6	386.1[3]	386.2	0.1
D	3,408	320	527	0.6	386.6	386.1[3]	386.2	0.1
E	3,761	195	185	1.3	386.6	386.1[3]	386.3	0.1
Pigeon Creek								
A	433[2]	181	2,892	4.9	377.7	359.5[4]	359.6	0.1
B	2,017[2]	168	2,543	5.6	377.7	360.3[4]	360.4	0.1
C	6,239[2]	205	3,299	4.3	377.7	363.0[4]	363.1	0.1
D	9,407[2]	449	6,182	2.2	377.7	364.2[4]	364.3	0.1
E	13,631[2]	211	3,098	4.5	377.7	365.6[4]	365.7	0.1
F	15,848[2]	241	3,332	4.1	377.7	366.5[4]	366.6	0.1
G	19,280[2]	268	4,562	3.0	377.7	369.0[4]	369.1	0.1
H	24,192[2]	411	4,550	3.0	377.7	371.4[4]	371.5	0.1
I	28,944[2]	262	3,717	3.7	377.7	373.0[4]	373.1	0.1
J	34,224[2]	258	3,744	3.6	378.0	378.0	378.1	0.1
K	37,445[2]	583	6,097	2.2	379.7	379.7	379.8	0.1
L	40,109[2]	449	6,396	2.1	380.7	380.7	380.8	0.1
M	44,861[2]	1,043	10,907	1.2	381.4	381.4	381.5	0.1
N	48,029[2]	950	11,979	1.1	381.7	381.7	381.8	0.1
O	51,197[2]	1,377	17,538	0.8	382.0	382.0	382.1	0.1

[1]Feet above confluence with Southern Railroad Embankment Ditch
[2]Feet above confluence with Ohio River
[3]Elevation computed without consideration of backwater effects from Southern Railroad Embankment Ditch
[4]Elevation computed without consideration of backwater effects from Ohio River

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN AND INCORPORATED AREAS

FLOODWAY DATA

NURENBERN DITCH - PIGEON CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pigeon Creek (continued)								
P	54,365[1]	657	7,154	1.9	382.4	382.4	382.5	0.1
Q	58,114[1]	921	10,054	1.3	383.4	383.4	383.5	0.1
R	64,556[1]	2,111	18,770	0.6	383.9	383.9	384.0	0.1
Pond Flat Ditch								
A	1,072[2]	968	1,582	2.1	423.2	423.2	423.3	0.1
B	2,793[2]	261	936	3.5	425.1	425.1	425.2	0.1
C	4,393[2]	1,375	2,486	1.3	427.9	427.9	427.9	0.0
D	7,830[2]	1,674	3,345	1.0	428.6	428.6	428.6	0.0
E	13,031[2]	2,296	6,205	0.5	429.1	429.1	429.2	0.1
F	14,942[2]	1,120	2,444	0.9	429.3	429.3	429.3	0.0
G	16,796[2]	171	676	3.3	430.0	430.0	430.1	0.1
H	19,789[2]	1,150	2,998	0.7	431.0	431.0	431.1	0.1
I	20,962[2]	700	6,733	0.2	431.7	431.7	431.7	0.0
J	22,356[2]	1,195	5,458	0.2	431.7	431.7	431.8	0.1
K	24,357[2]	529	440	1.9	434.3	434.3	434.3	0.0
L	26,141[2]	338	425	1.9	437.7	437.7	437.8	0.1
Pond Flat Ditch Lateral “A”								
A	2,429[2]	636	399	3.1	431.7	427.7[3]	427.8	0.1
B	3,469[2]	444	683	1.5	431.7	430.8[3]	430.9	0.1
C	4,293[2]	300	195	4.5	435.6	435.6	435.6	0.0
D	5,227[2]	267	922	1.0	439.5	439.5	439.5	0.0

[1]Feet above confluence with Ohio River
[2]Feet above mouth
[3]Elevation computed without consideration of backwater effects from Pond Flat Ditch

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN AND INCORPORATED AREAS

FLOODWAY DATA

PIGEON CREEK - POND FLAT DITCH - POND FLAT DITCH LATERAL “A”

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pond Flat Ditch Lateral "B"								
A	1,901	325	223	2.8	435.0	435.0	435.1	0.1
B	2,872	350	218	2.9	437.5	437.5	437.5	0.0
Pond Flat Ditch Lateral "C"/ Rusher Creek								
A	2,286	680	978	1.8	429.2	427.9[3]	428.0	0.1
B	4,947	465	819	2.0	432.3	432.3	432.4	0.1
C	7,656	1,100	2,823	0.5	434.8	434.8	434.8	0.0
D	8,184	1,680[2]	2,656	0.4	434.8	434.8	434.9	0.1
E	8,765	645	1,710	0.6	434.8	434.8	434.9	0.1
F	11,035	217	390	2.6	439.1	439.1	439.2	0.1
G	12,830	120	159	6.5	445.9	445.9	446.0	0.1
Pond Flat Ditch Lateral "D"								
A	3,670	480	783	0.9	433.8	433.8	433.8	0.0
B	5,977	381	757	0.9	438.2	438.2	438.3	0.1
Pond Flat Ditch Lateral "E"								
A	966	1,680[2]	1,915	0.6	434.8	434.8	434.9	0.1
B	1,753	455	1,062	1.0	434.9	434.9	435.0	0.1

[1]Feet above mouth
[2]Combined width of Rusher Creek and Pond Flat Ditch Lateral E
[3]Elevation computed without consideration of backwater effects from Pond Flat Ditch

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN AND INCORPORATED AREAS

FLOODWAY DATA

POND FLAT DITCH LATERAL "B" - POND FLAT DITCH LATERAL "C"/ RUSHER CREEK - POND FLAT DITCH LATERAL "D" - POND FLAT DITCH LATERAL "E"

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Schlensker Ditch								
A	7,233	605	1,655	3.4	388.8	388.8	388.9	0.1
B	7,587	268	1,695	6.4	389.5	389.5	389.6	0.1
C	7,769	88	1,078	5.2	391.1	391.1	391.2	0.1
D	8,126	400	4,230	2.2	394.1	394.1	394.1	0.0
E	8,801	880	4,205	1.3	394.3	394.3	394.3	0.0
F	9,501	1,120	3,892	1.4	394.4	394.4	394.5	0.0
G	10,205	1,400	3,380	1.5	394.6	394.6	394.7	0.1
H	10,909	1,560	1,807	2.7	395.1	395.1	395.2	0.1
I	14,033	1,110	2,037	2.2	401.9	401.9	402.0	0.1
J	14,149	989	3,301	1.3	403.2	403.2	403.3	0.1
K	15,555	1,100	2,164	1.9	404.5	404.5	404.6	0.1
L	18,985	115	565	3.2	412.3	412.3	412.4	0.1
M	19,535	61	375	4.8	413.5	413.5	413.5	0.0
N	20,655	86	351	3.7	417.5	417.5	417.5	0.0
O	21,215	95	404	3.0	418.8	418.8	418.8	0.0
P	22,440	37	242	4.0	425.0	425.0	425.0	0.0
Q	22,915	33	165	5.3	426.4	426.4	426.4	0.0
R	23,137	35	156	5.6	427.4	427.4	427.4	0.0
S	23,559	22	102	8.6	430.9	430.9	431.0	0.1
T	24,213	220	350	2.5	435.1	435.1	435.2	0.1
U	24,983	140	229	3.8	440.5	440.5	440.6	0.1
Schlensker Ditch Tributary								
A	1,726[1]	540	532	3.5	407.4	407.4	407.4	0.0
B	2,003[1]	530	924	2.0	408.2	408.2	408.3	0.1
C	2,280[1]	385	450	4.0	408.3	408.3	408.4	0.1
D	2,586[1]	172	595	3.0	409.0	409.0	409.1	0.1

[1]Feet above confluence with Bluegrass Creek

TABLE 4

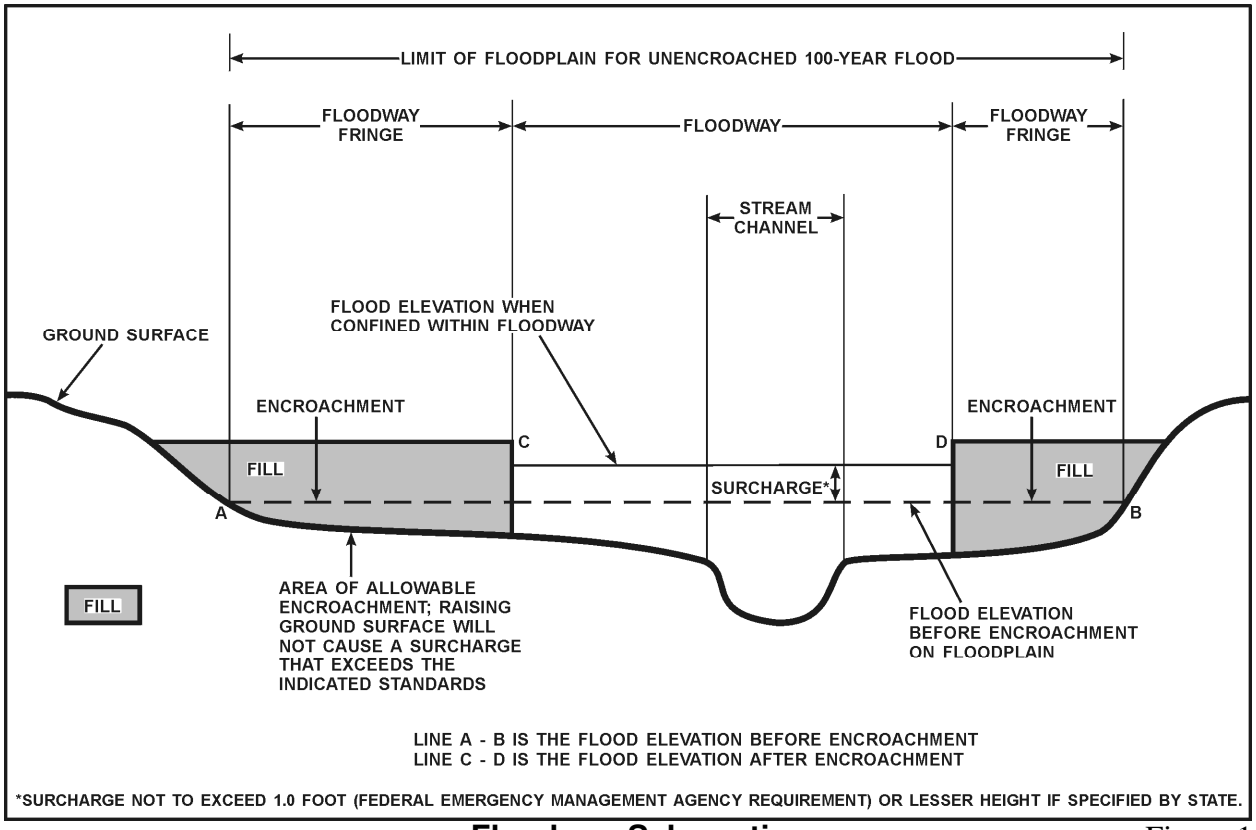
FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN AND INCORPORATED AREAS

FLOODWAY DATA

SCHLENSKER DITCH- SCHLENSKER DITCH TRIBUTARY

The area between the floodway and 1-percent annual chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent-annual-chance flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1.



Floodway Schematic Figure 1

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. The zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the detailed hydraulic analyses are shown within this zone.

Zone AR

Area of special flood hazard formerly protected from the 1-percent-annual-chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1-percent-annual-chance or greater flood event.

Zone A99

Zone A99 is the flood insurance rate zone that corresponds to areas of the 1-percent-annual-chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or depths are shown within this zone.

Zone V

Zone V is the flood insurance rate zone that corresponds to the 1-percent-annual-chance coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no base flood elevations are shown within this zone.

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 1-percent-annual-chance coastal floodplains that have additional hazards associated with storm

waves. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-annual-chance floodplain, and to areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by levees. No base flood elevations or depths are shown within this zone.

Zone D

Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 1- and 0.2-percent-annual-chance floodplains. Floodways and the locations of selected cross sections used in the hydraulic analyses and floodway computations are shown where applicable.

The current FIRM presents flooding information for the entire geographic area of Washington County. Previously, separate Flood Hazard Boundary Maps and/or FIRMs were prepared for each identified flood-prone incorporated community and the unincorporated areas of the county. This countywide FIRM also includes flood hazard information that was presented separately on Flood Boundary and Floodway Maps (FBFMs), where applicable. Historical data relating to the maps prepared for each community, up to and including this countywide FIS, are presented in Table 5, "Community Map History."

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Darmstadt, Town of	February 1, 1980[1]	None	February 1, 1980[1]	March 19, 1982[1] August 5, 1991[1]
Evansville, City of	June 14, 1974	May 21, 1976	October 15, 1981	
Vanderburgh County (Unincorporated Areas)	February 1, 1980	None	February 1, 1980	March 19, 1982 August 5, 1991

[1]This community did not have its own FIRM prior to this countywide FIS. The land area for this community was previously shown on the FIRM for the unincorporated areas of Vanderburgh County, but was not identified as a separate NFIP community. Therefore, the dates for this community were taken from the FIRM for Vanderburgh County.

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

FISs have been prepared for the unincorporated areas of Henderson County (FEMA, 1991); and the City of Henderson, Kentucky (FEMA, 1986); and the Unincorporated Areas of Warrick County, Indiana (FEMA, 1981).

Flood Hazard Boundary Maps have been prepared for the Unincorporated Areas of Gibson County, Indiana; and the Unincorporated Areas of Posey County, Indiana (FEMA, 1977).

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Vanderburgh County has been compiled into this FIS. Therefore, this FIS supersedes all previously printed FIS Reports, FHBMs, FBFMs, and FIRMs for all of the incorporated and unincorporated jurisdictions within Vanderburgh County.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this FIS can be obtained by contacting FEMA, Federal Insurance and Mitigation Division, 536 South Clark Street, Sixth Floor, Chicago, Illinois 60605.

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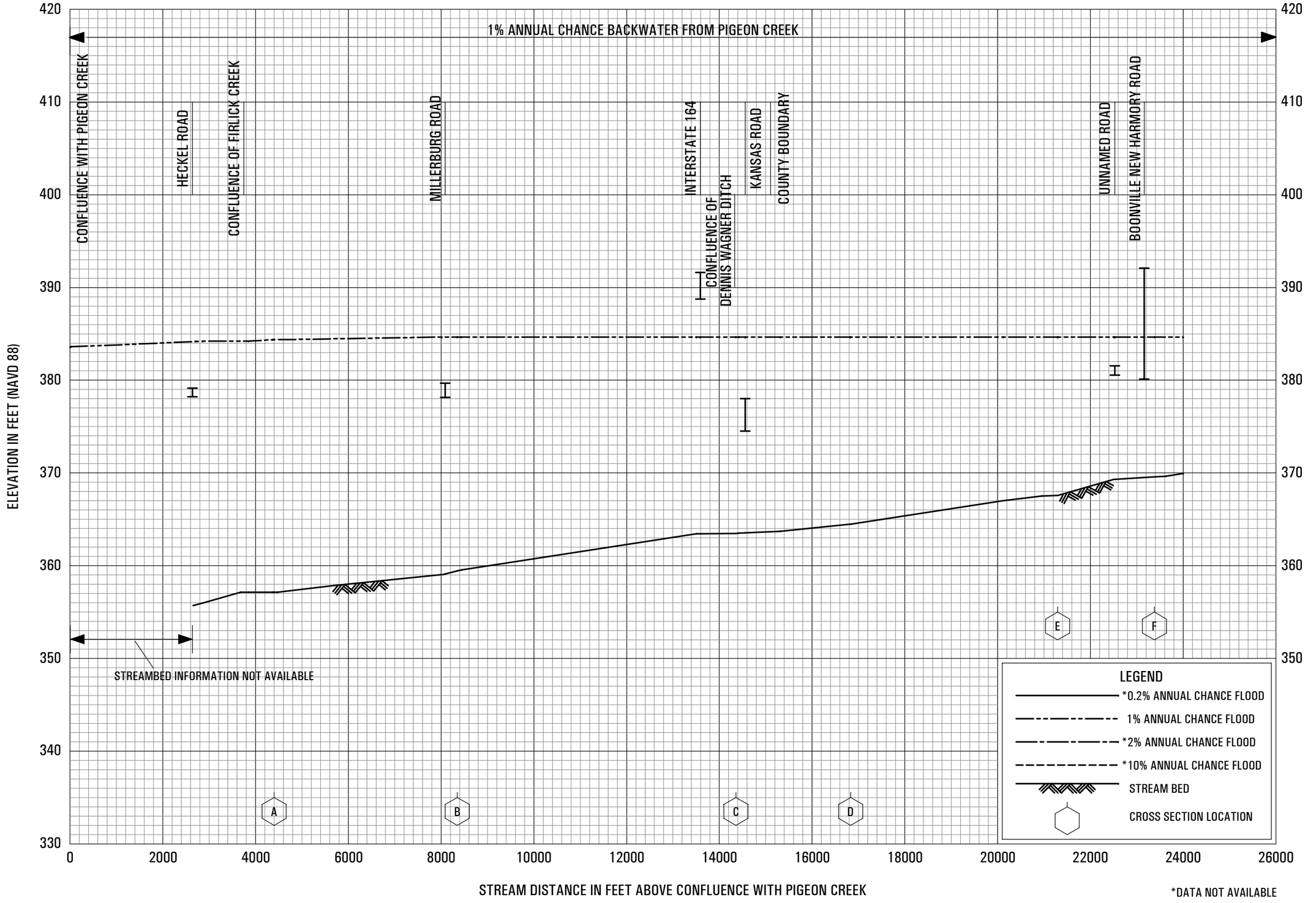


FLOOD PROFILES

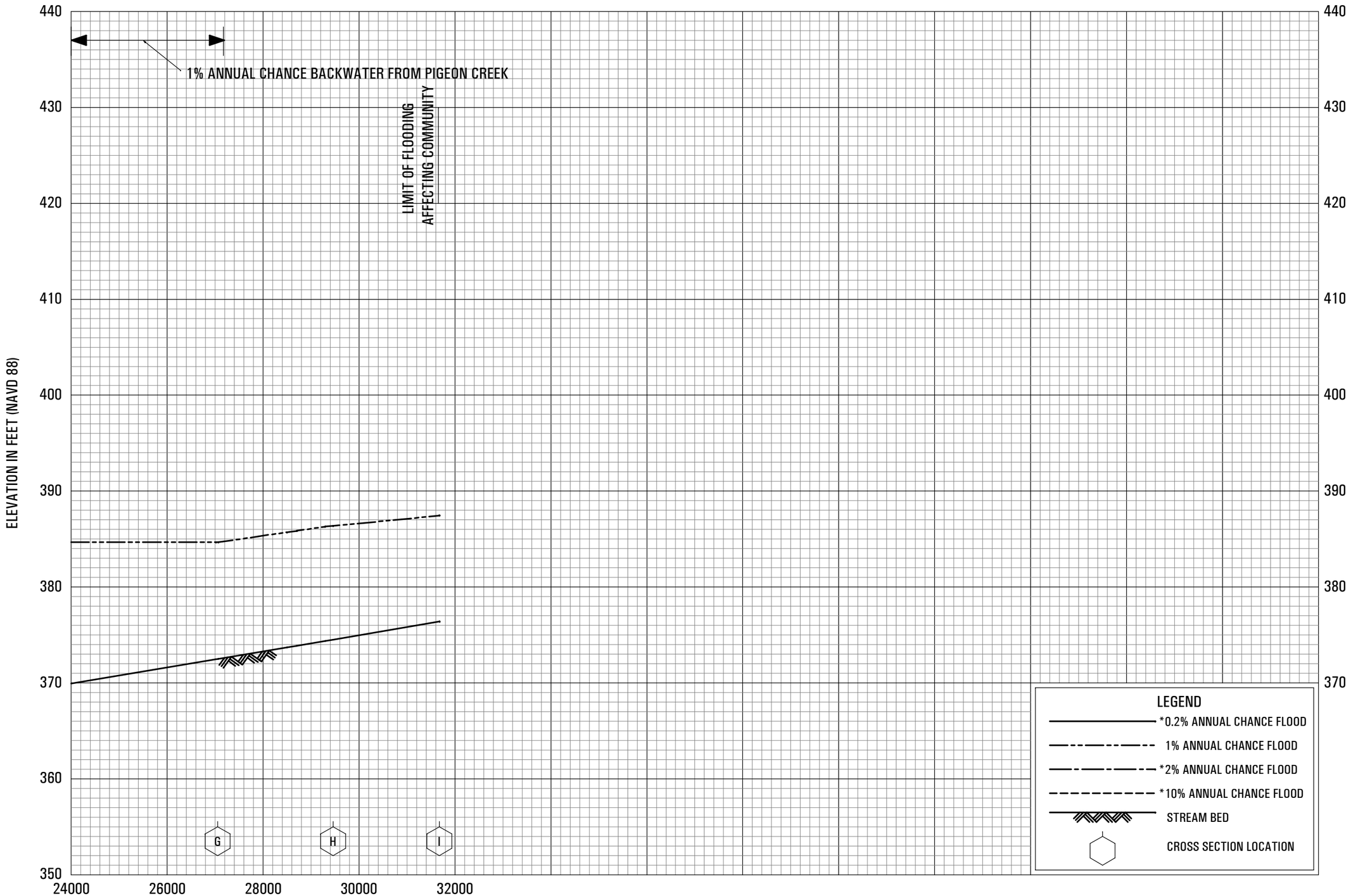
BLUEGRASS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

01P



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FLOOD PROFILES

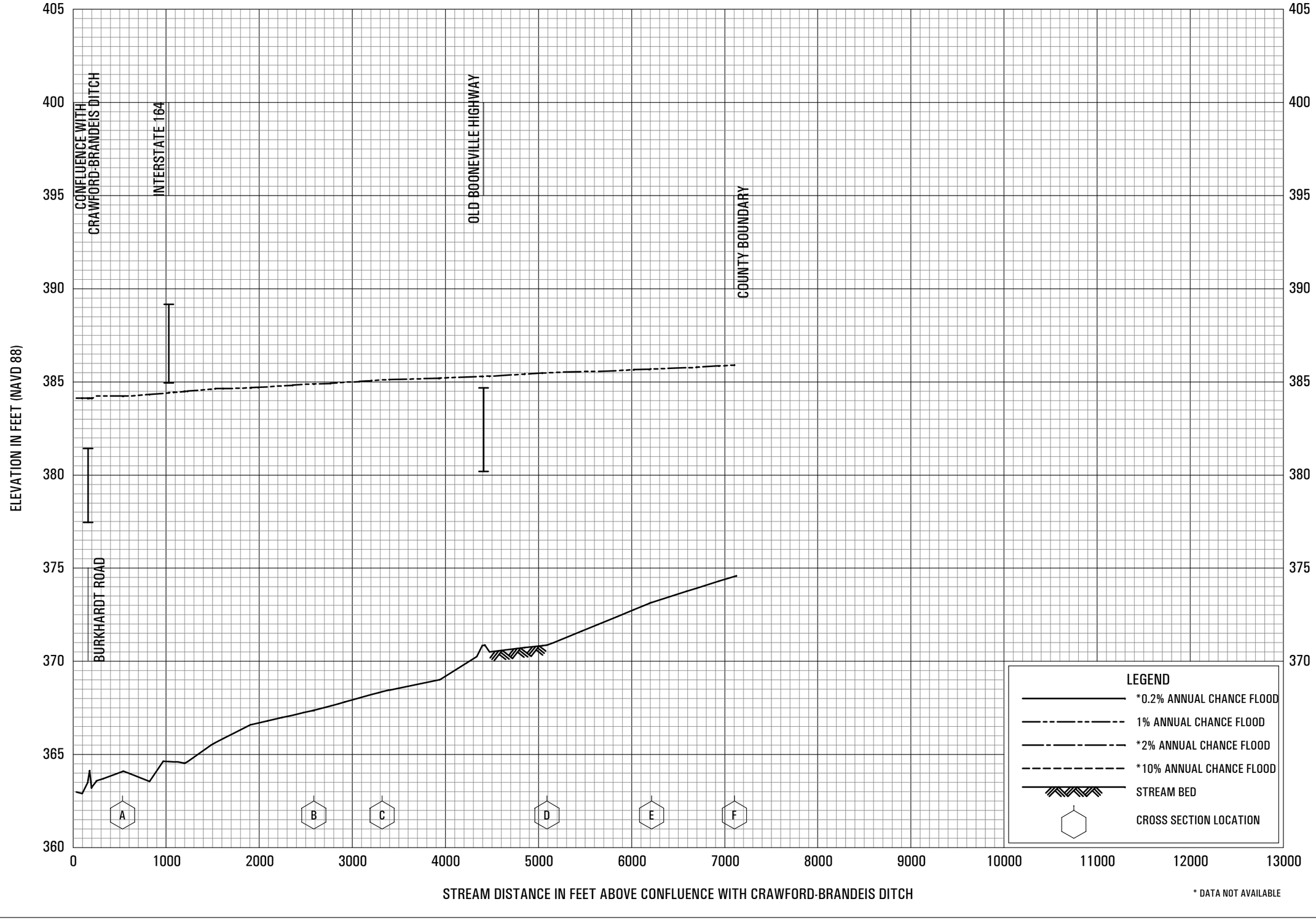
BLUEGRASS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

02P



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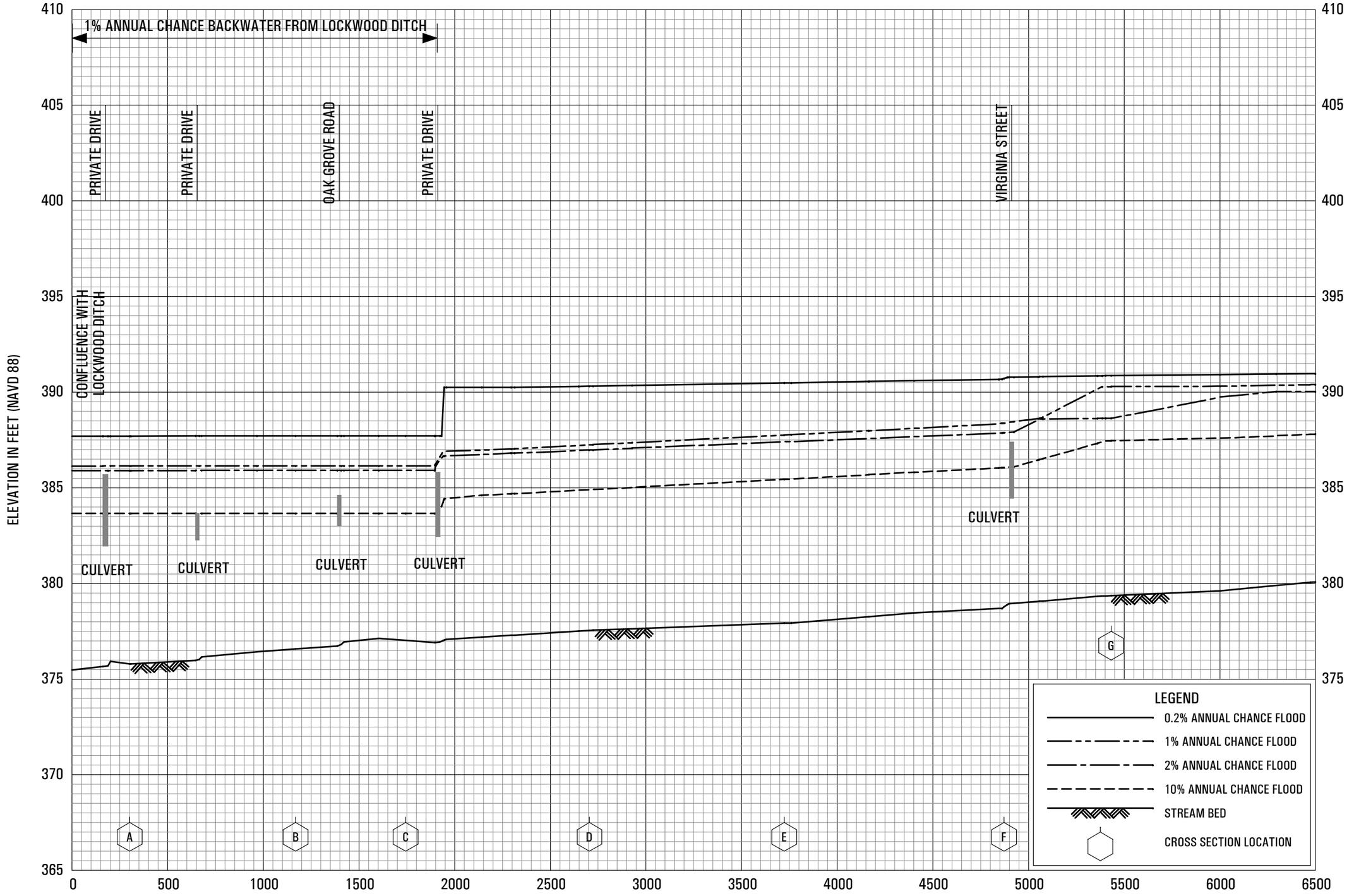
FLOOD PROFILES

BOESCHE DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS



FLOOD PROFILES

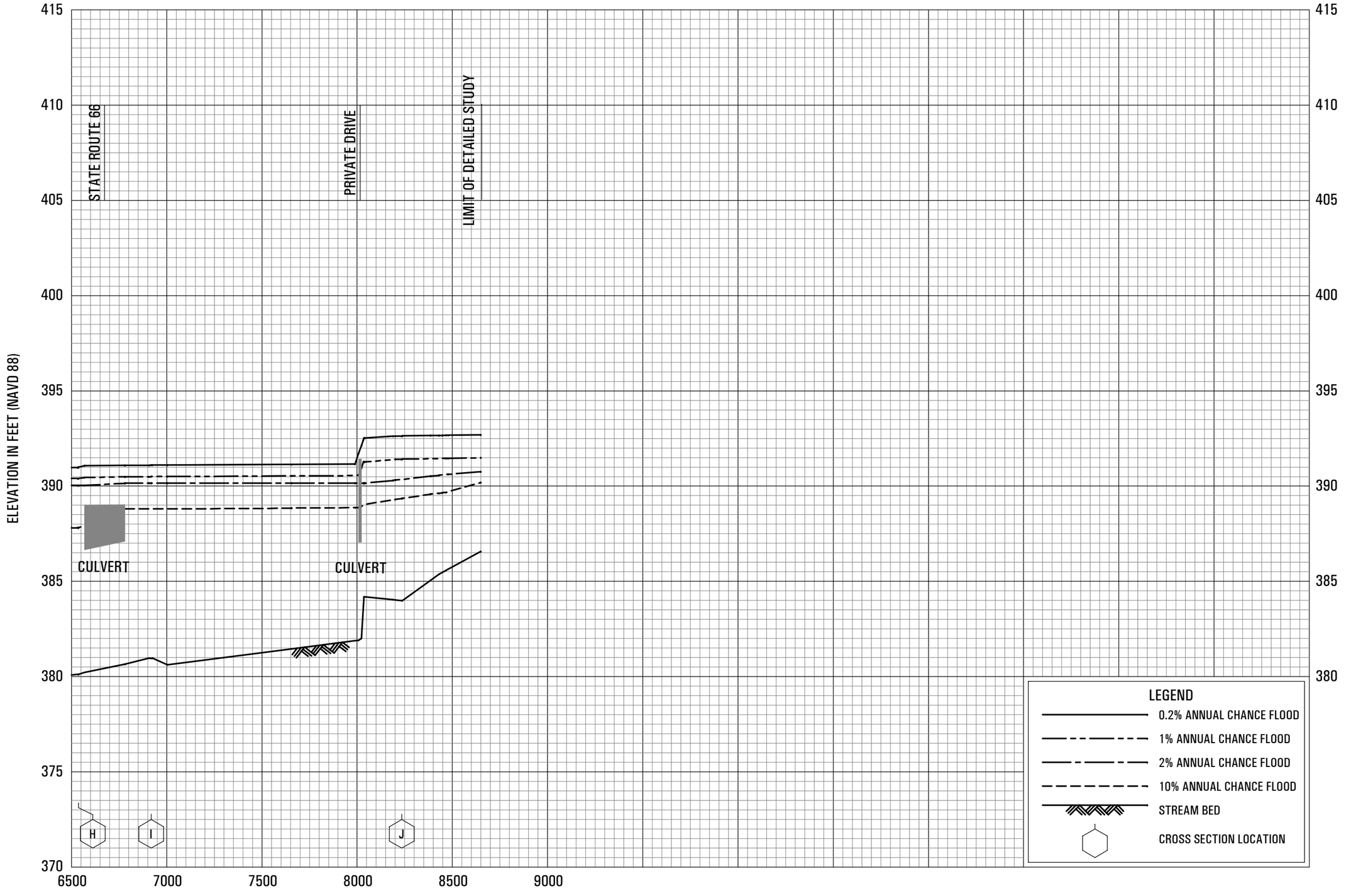
BURKHARDT DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

04P



FLOOD PROFILES

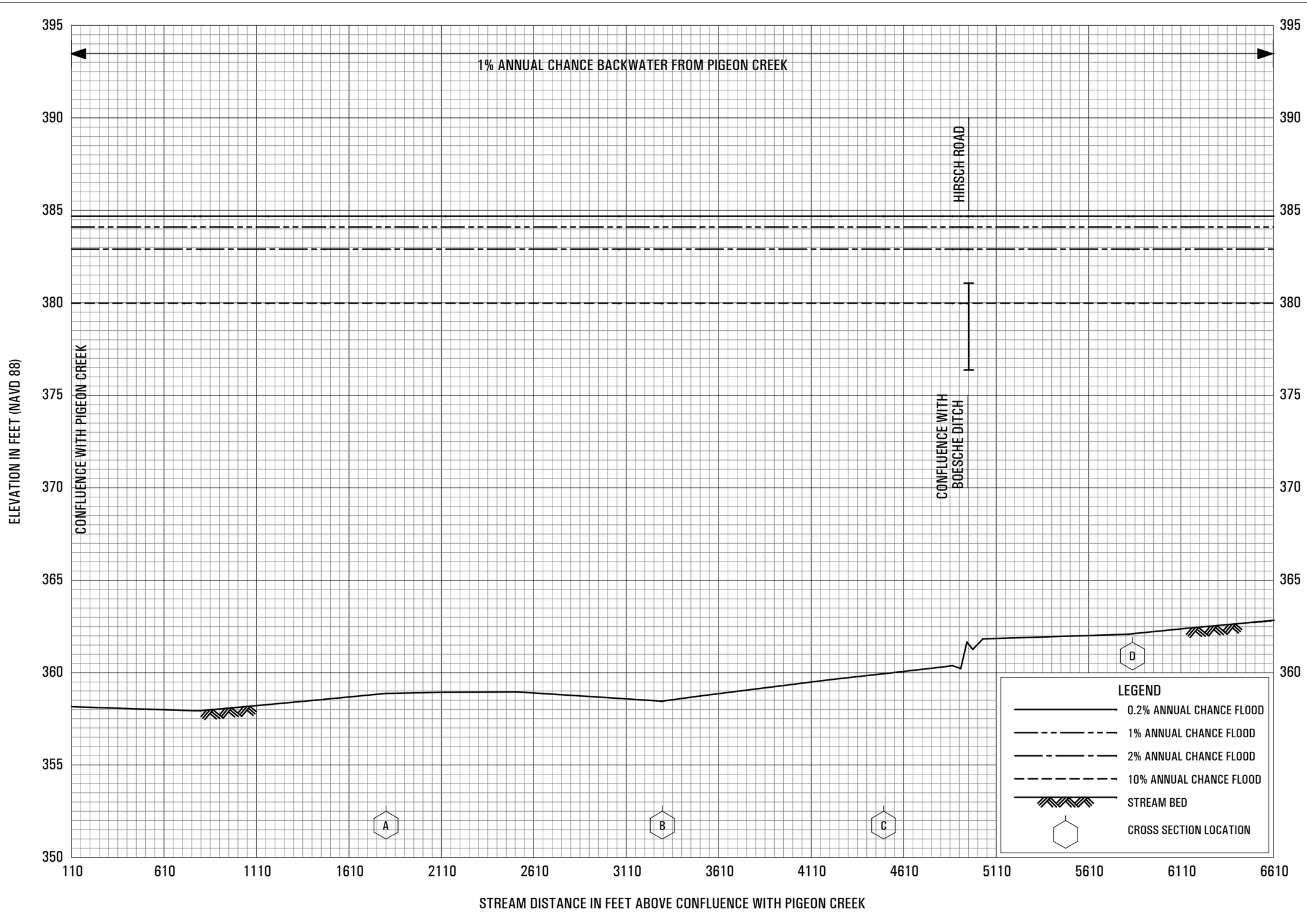
BURKHARDT DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

05P



FLOOD PROFILES

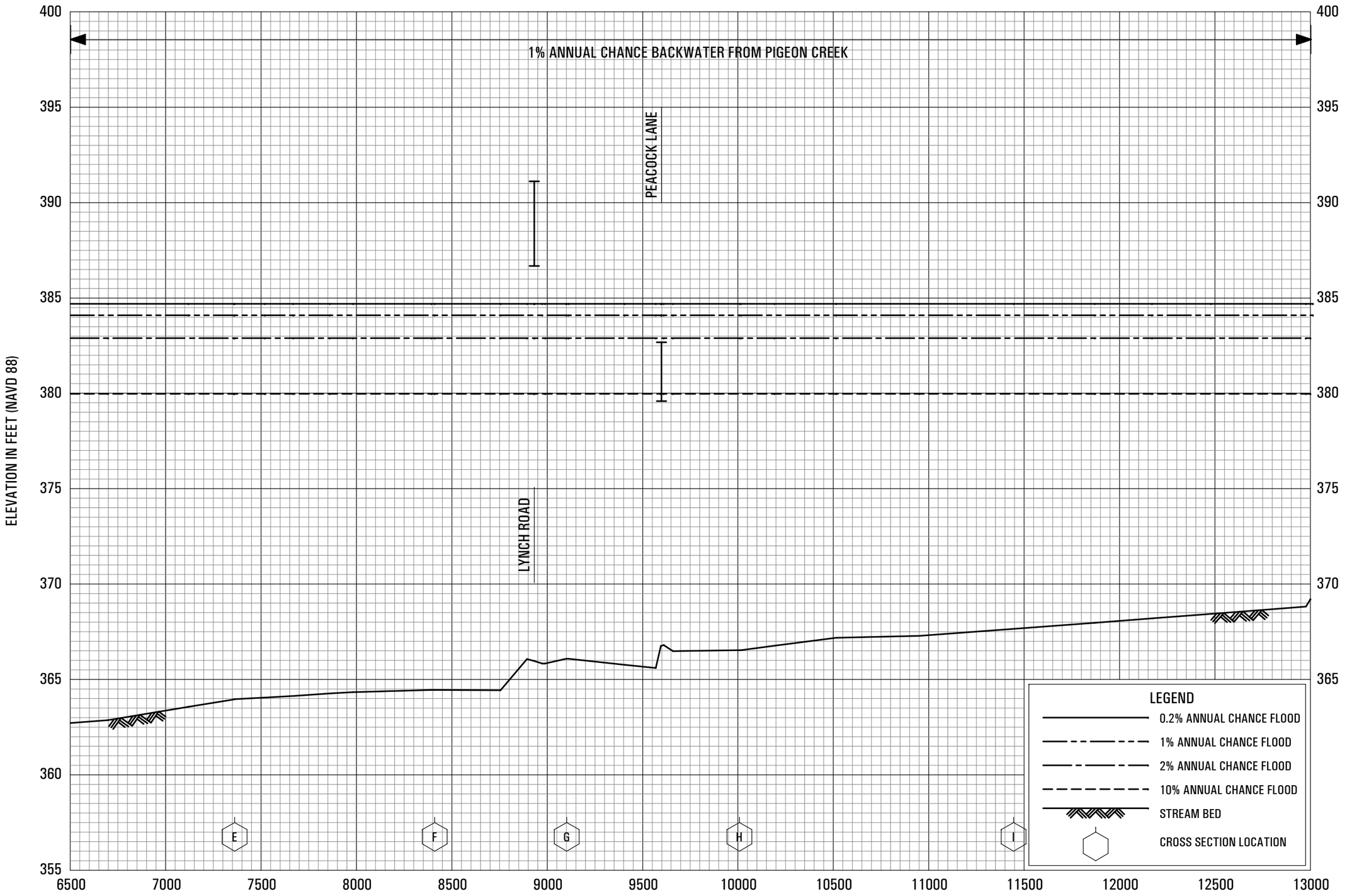
CRAWFORD-BRANDEIS DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

06P



FLOOD PROFILES

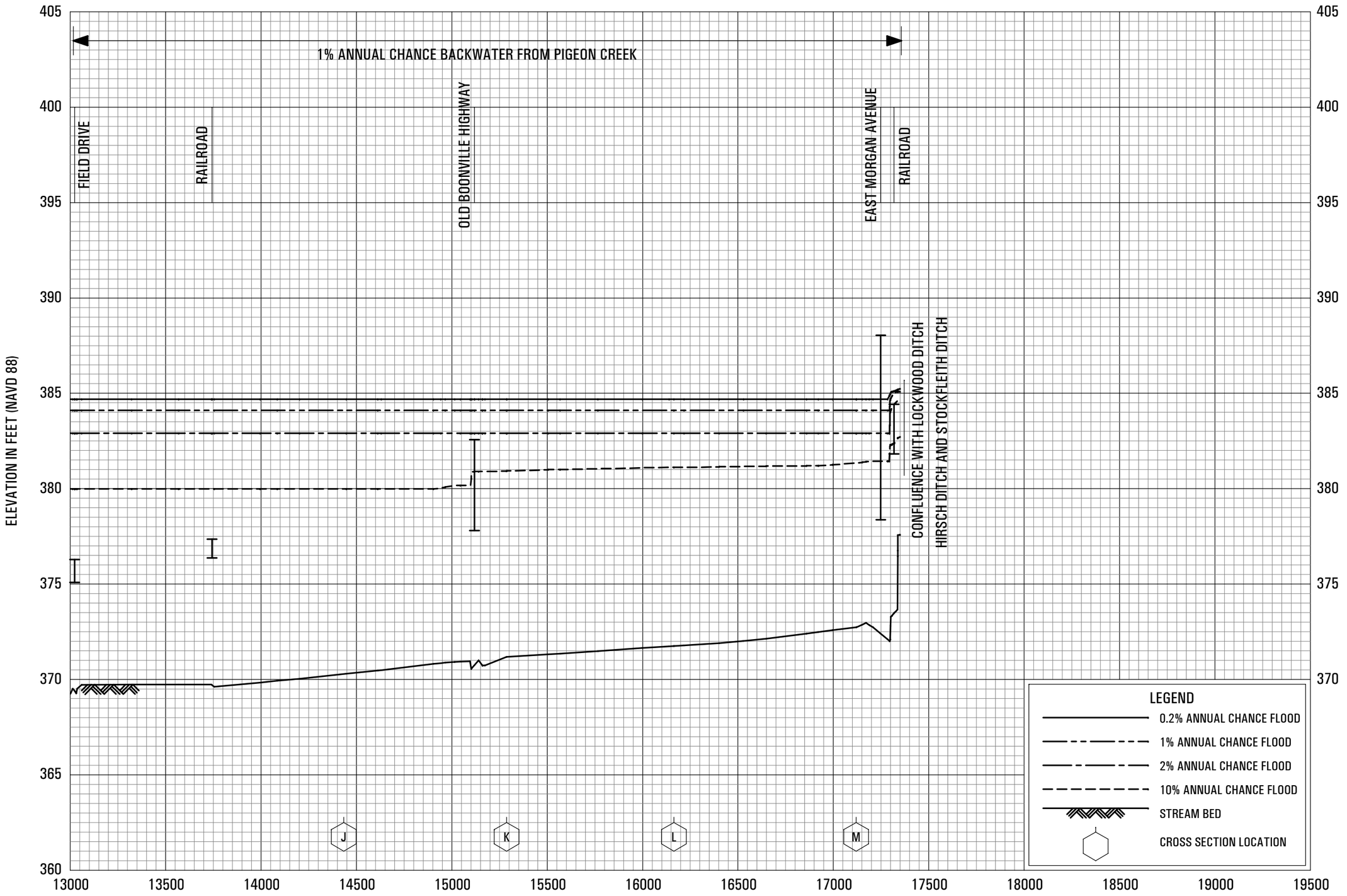
CRAWFORD-BRANDEIS DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

07P



FLOOD PROFILES

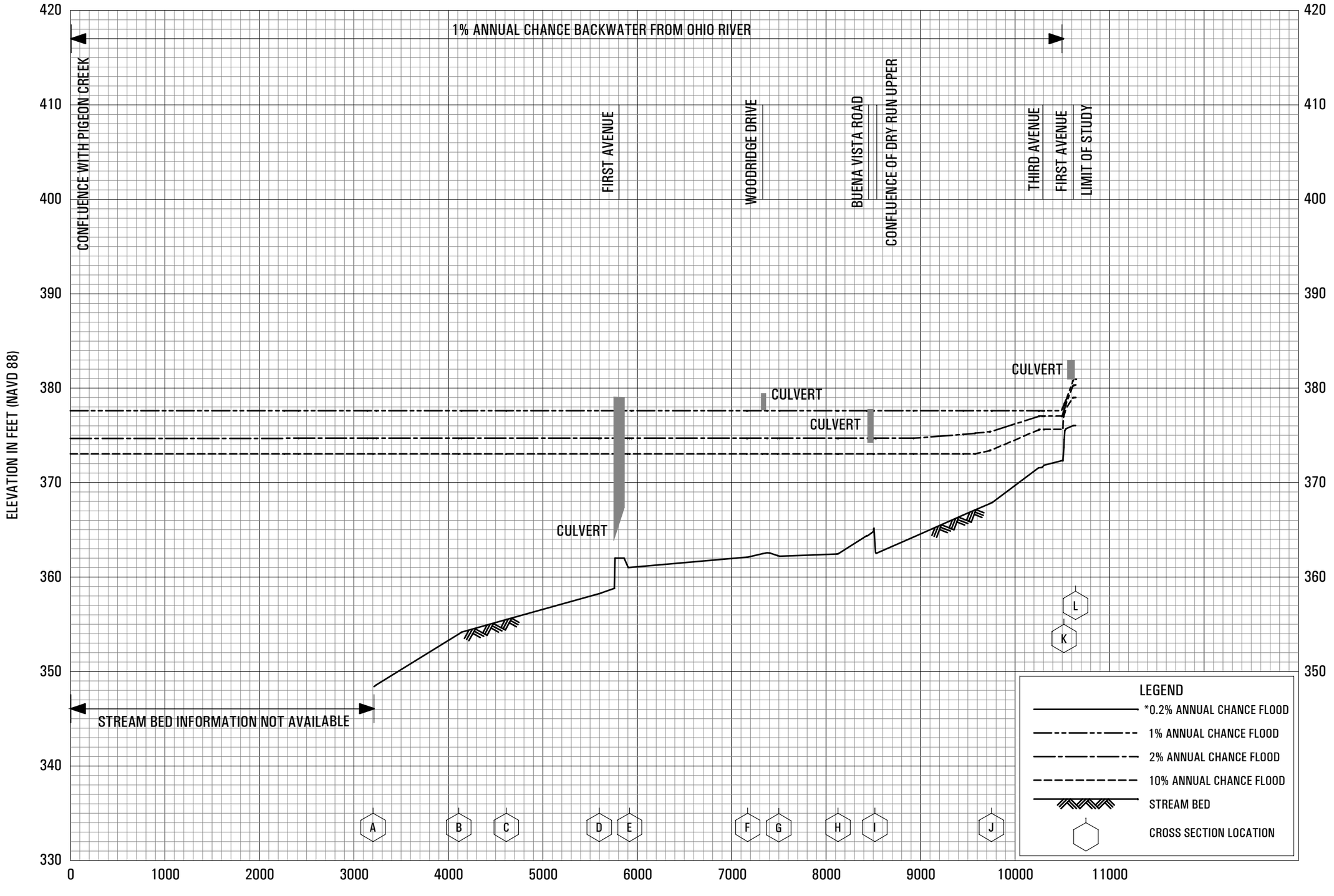
CRAWFORD-BRANDEIS DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

08P



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FLOOD PROFILES

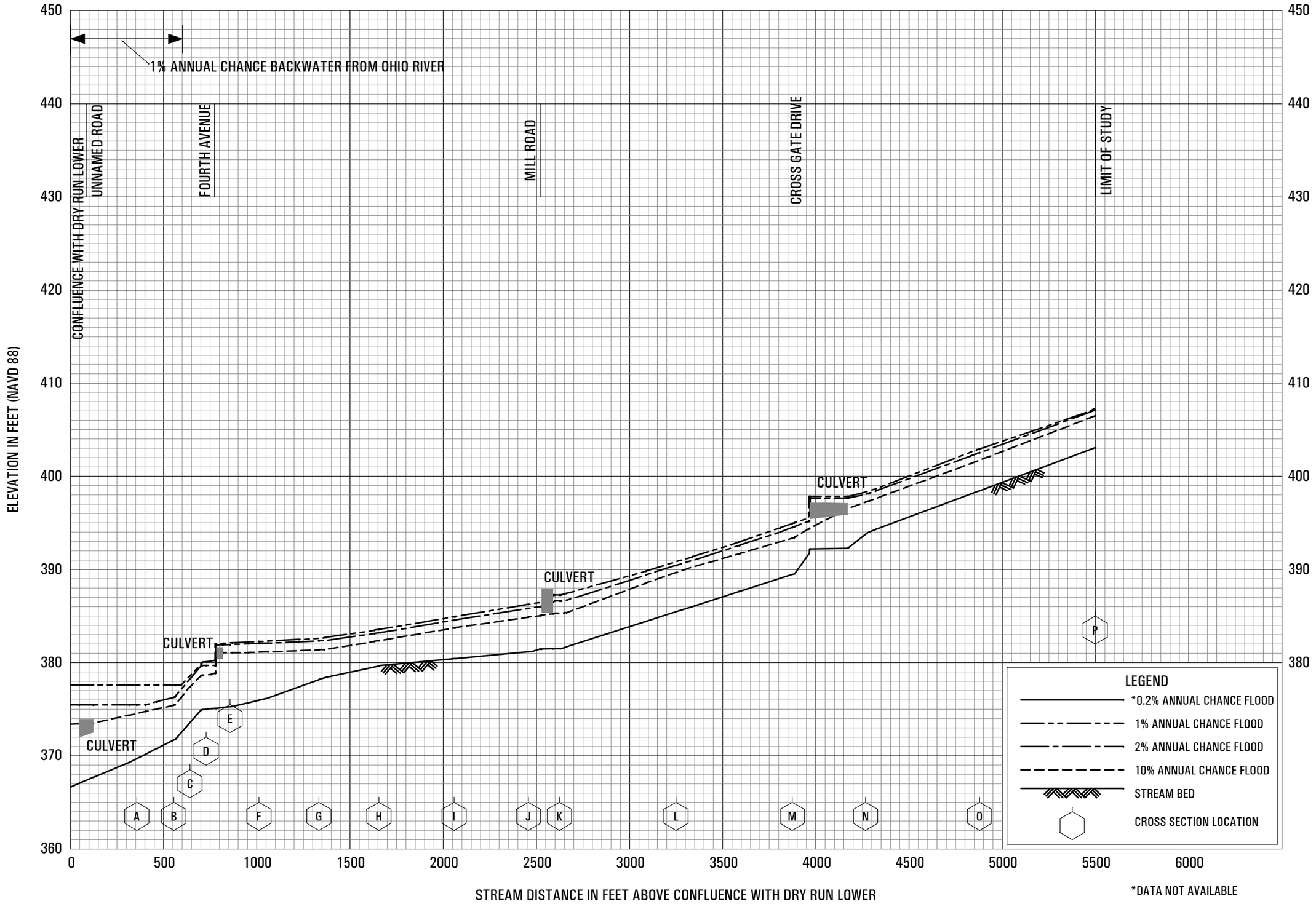
DRY RUN LOWER

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

09P



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FLOOD PROFILES

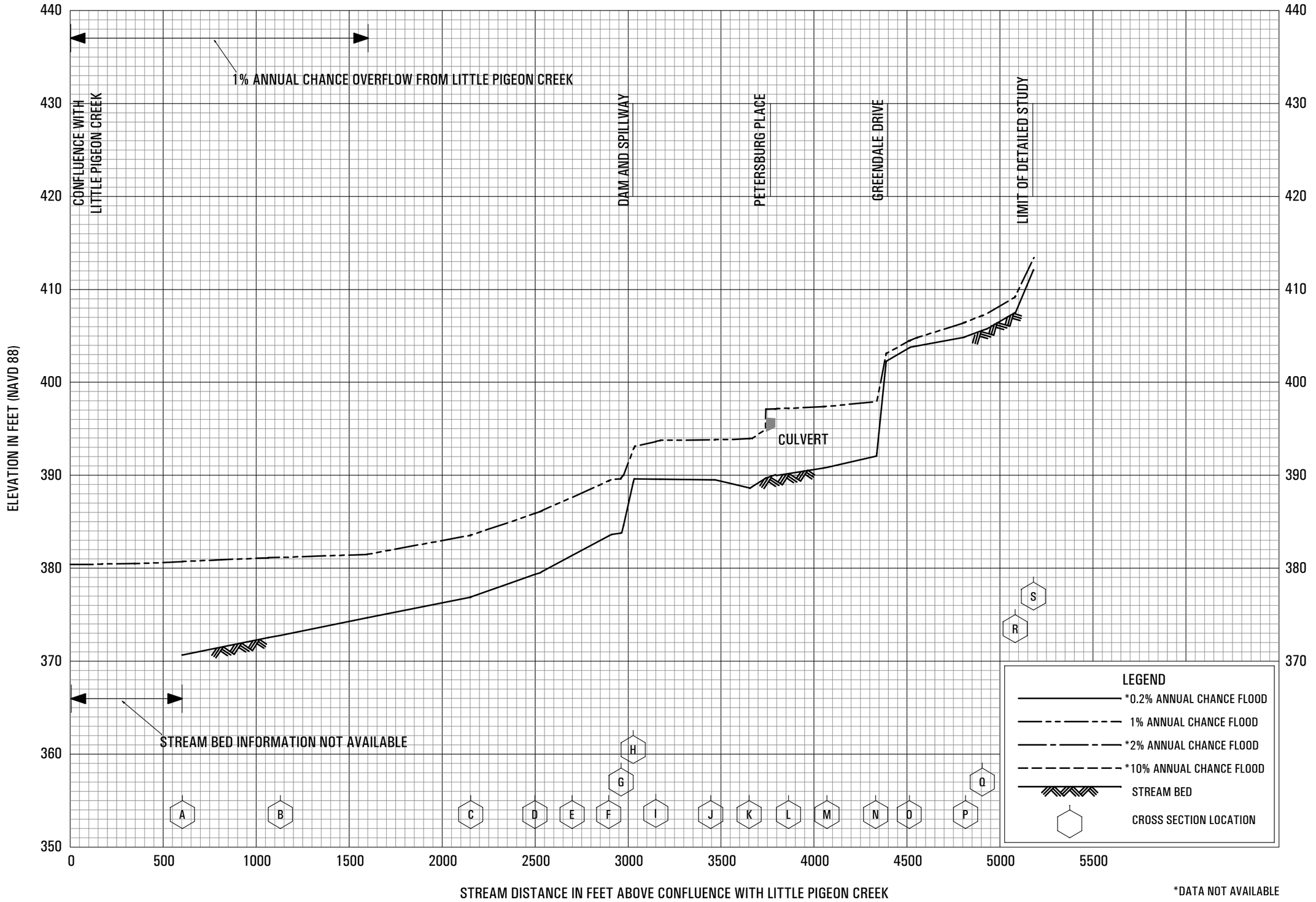
DRY RUN UPPER

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

010P



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FLOOD PROFILES

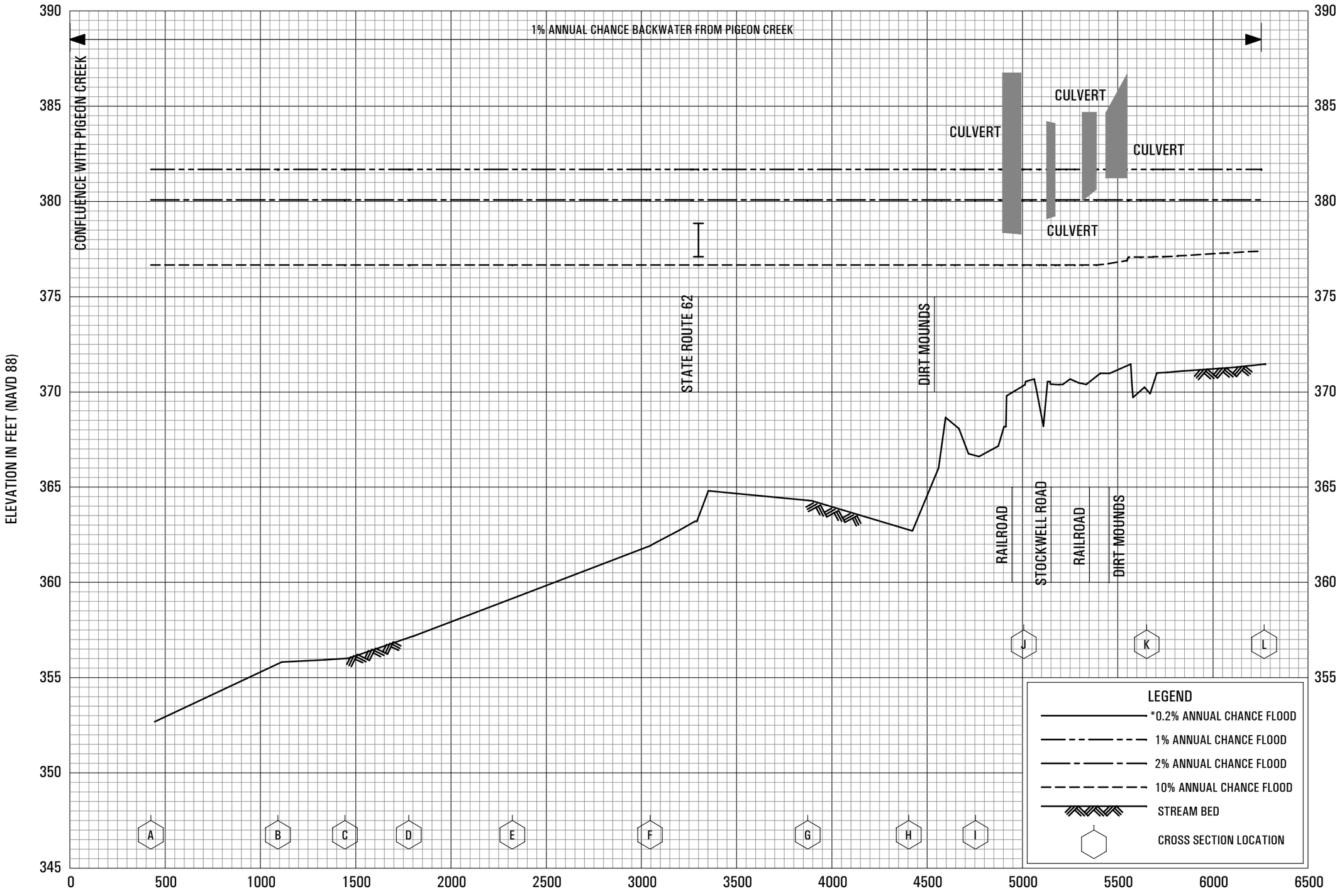
GREENBRIAR HILLS TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

011P



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FLOOD PROFILES

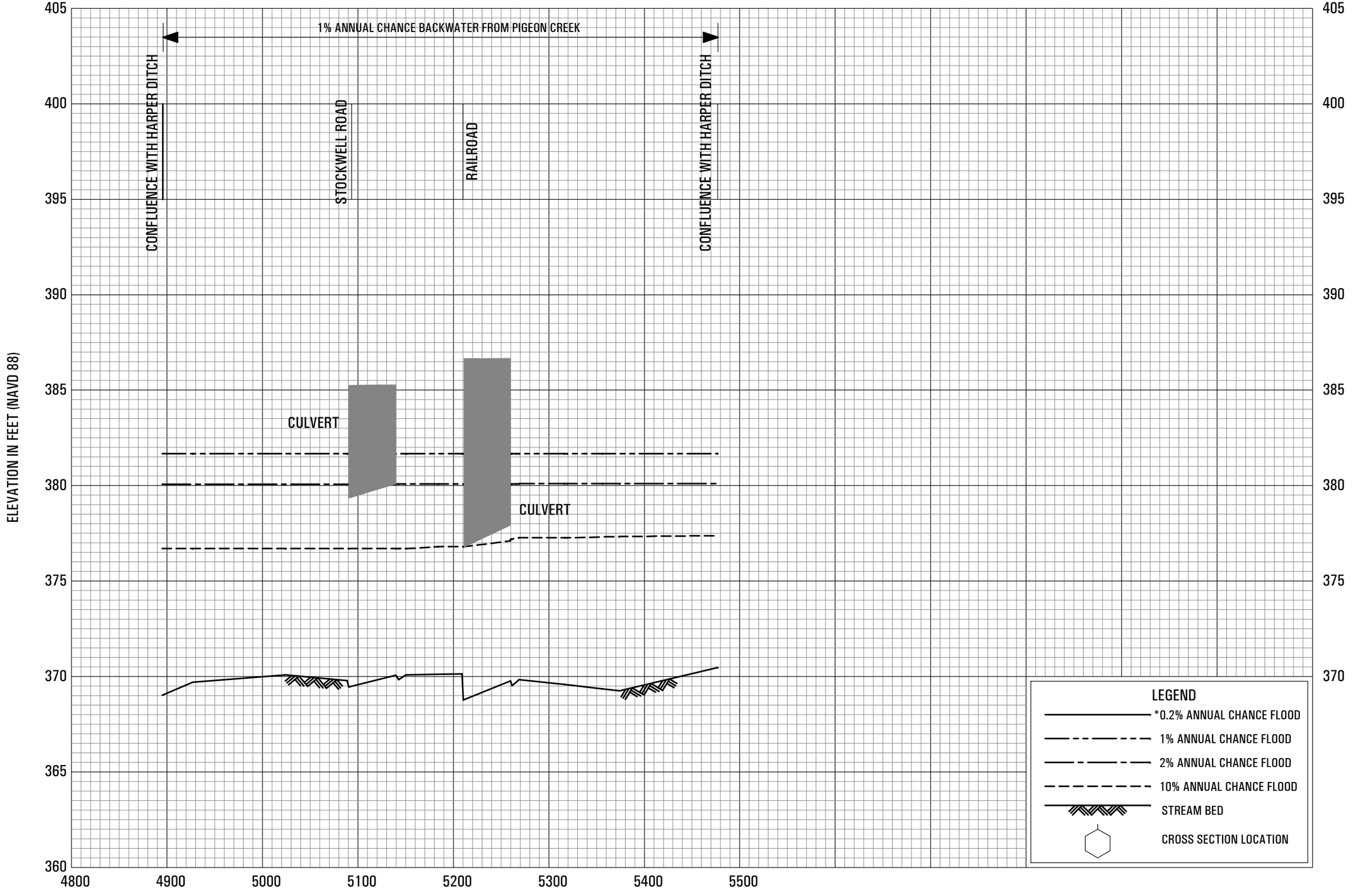
HARPER DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

12P



FLOOD PROFILES

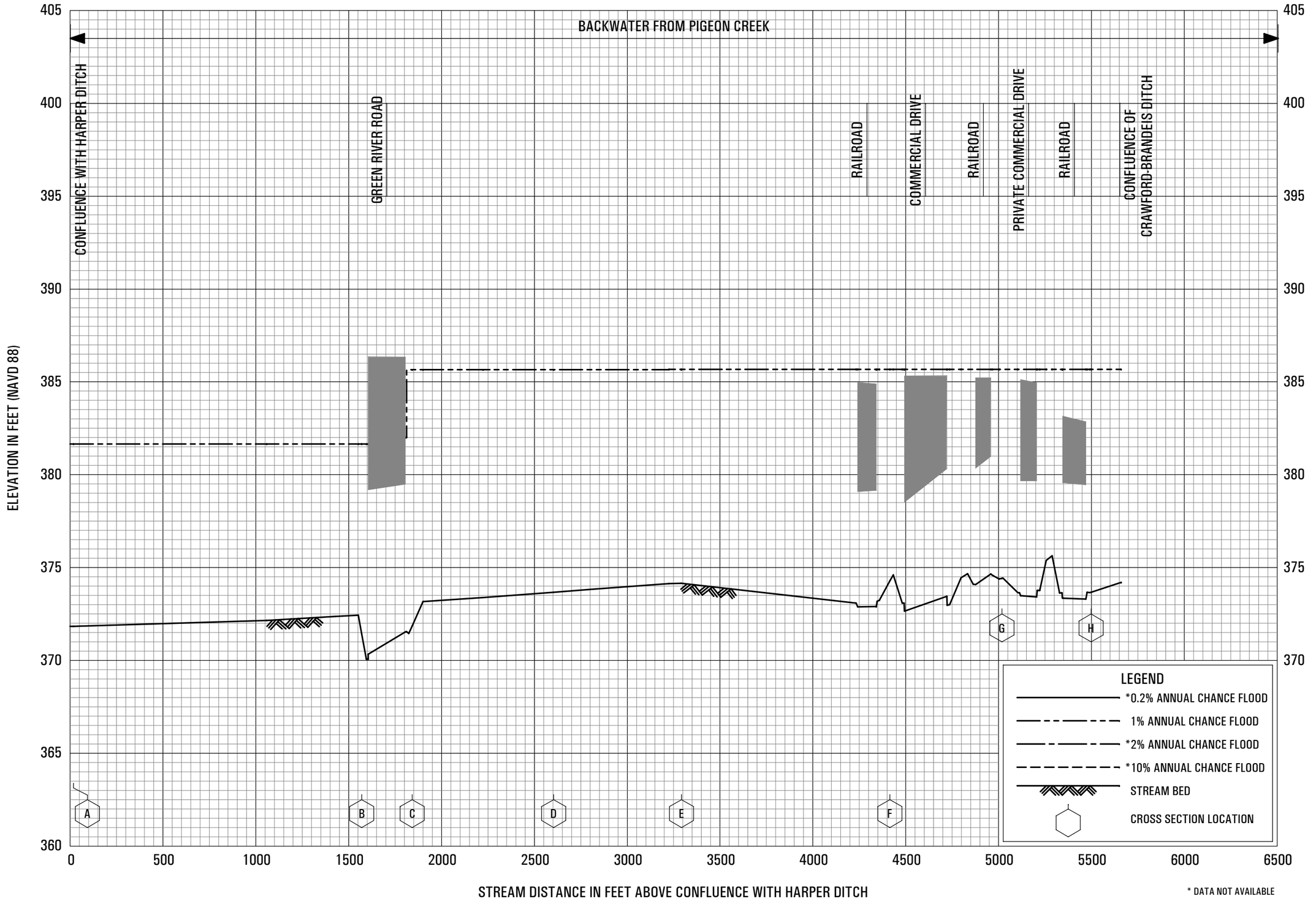
HARPER DITCH OVERFLOW

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

013P



FLOOD PROFILES

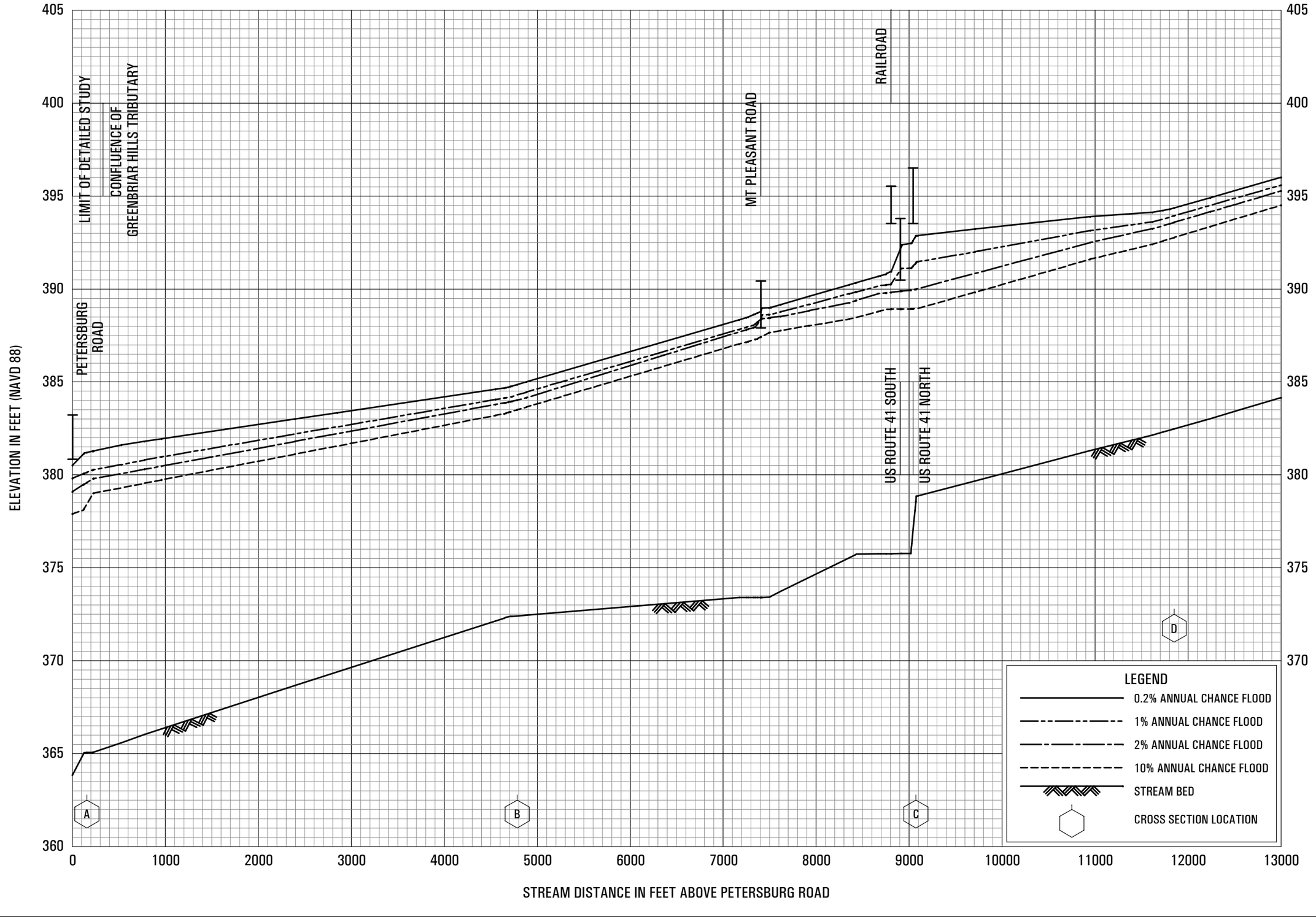
HIRSCH DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

014P



FLOOD PROFILES

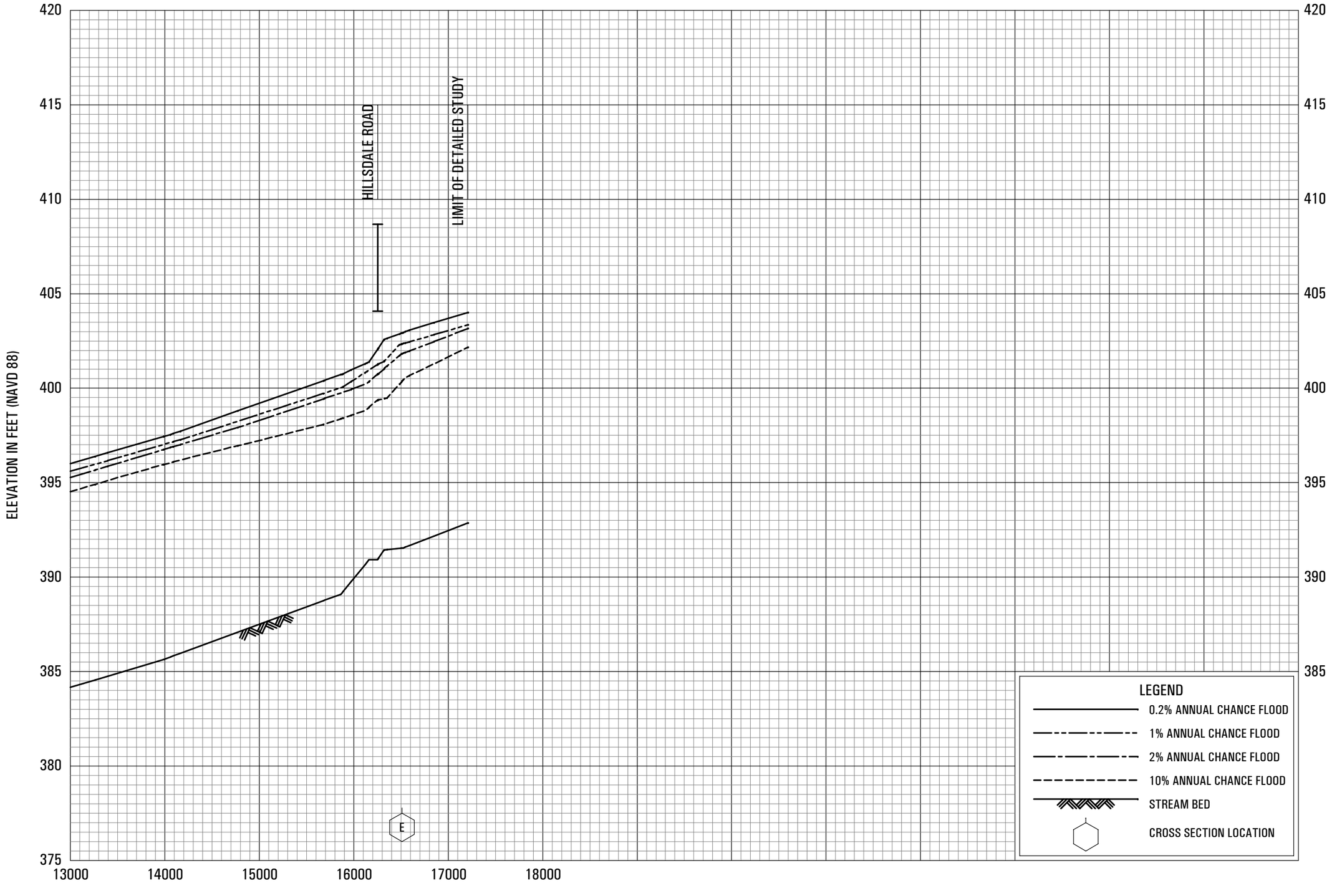
LITTLE PIGEON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

015P



FLOOD PROFILES

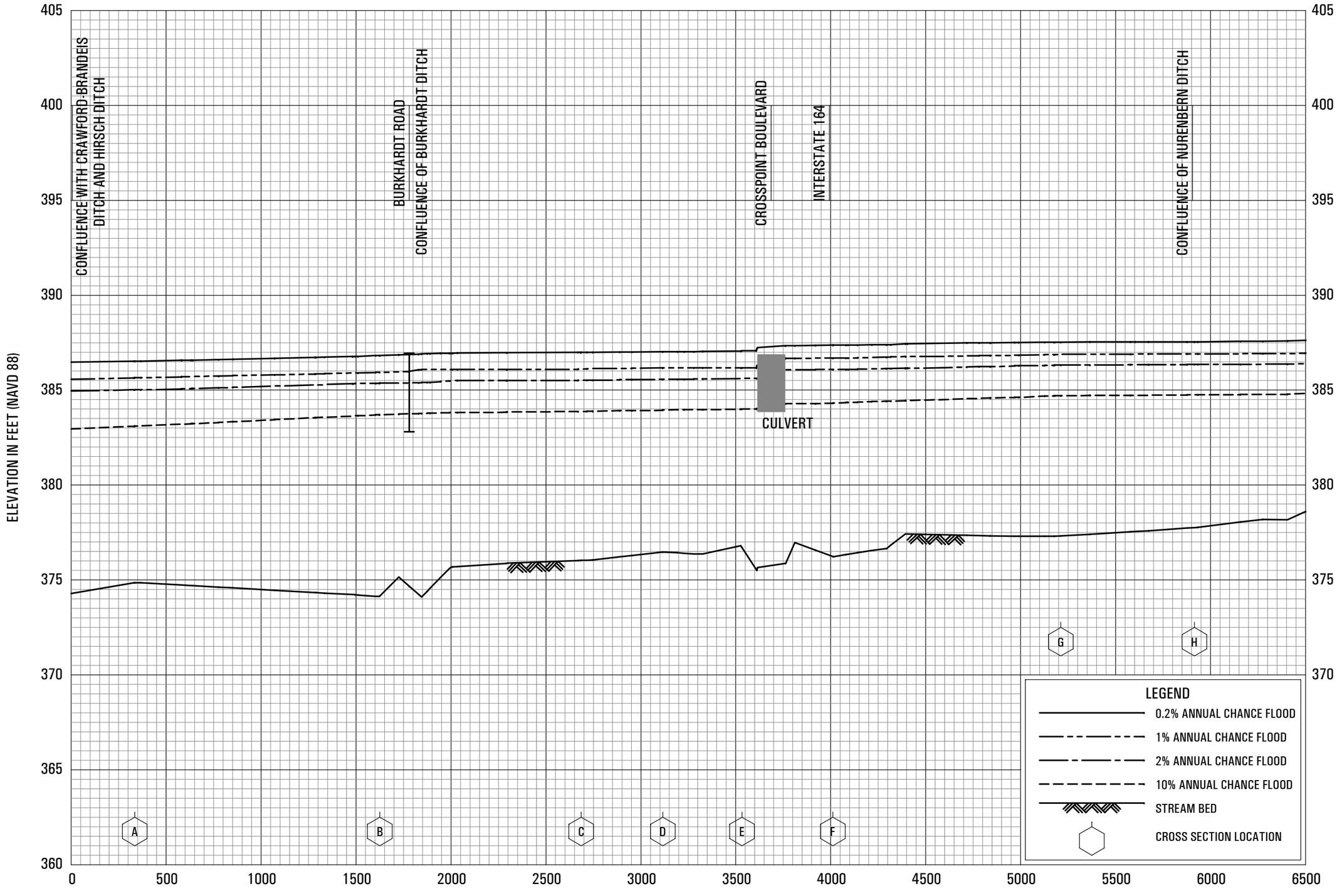
LITTLE PIGEON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

016P



FLOOD PROFILES

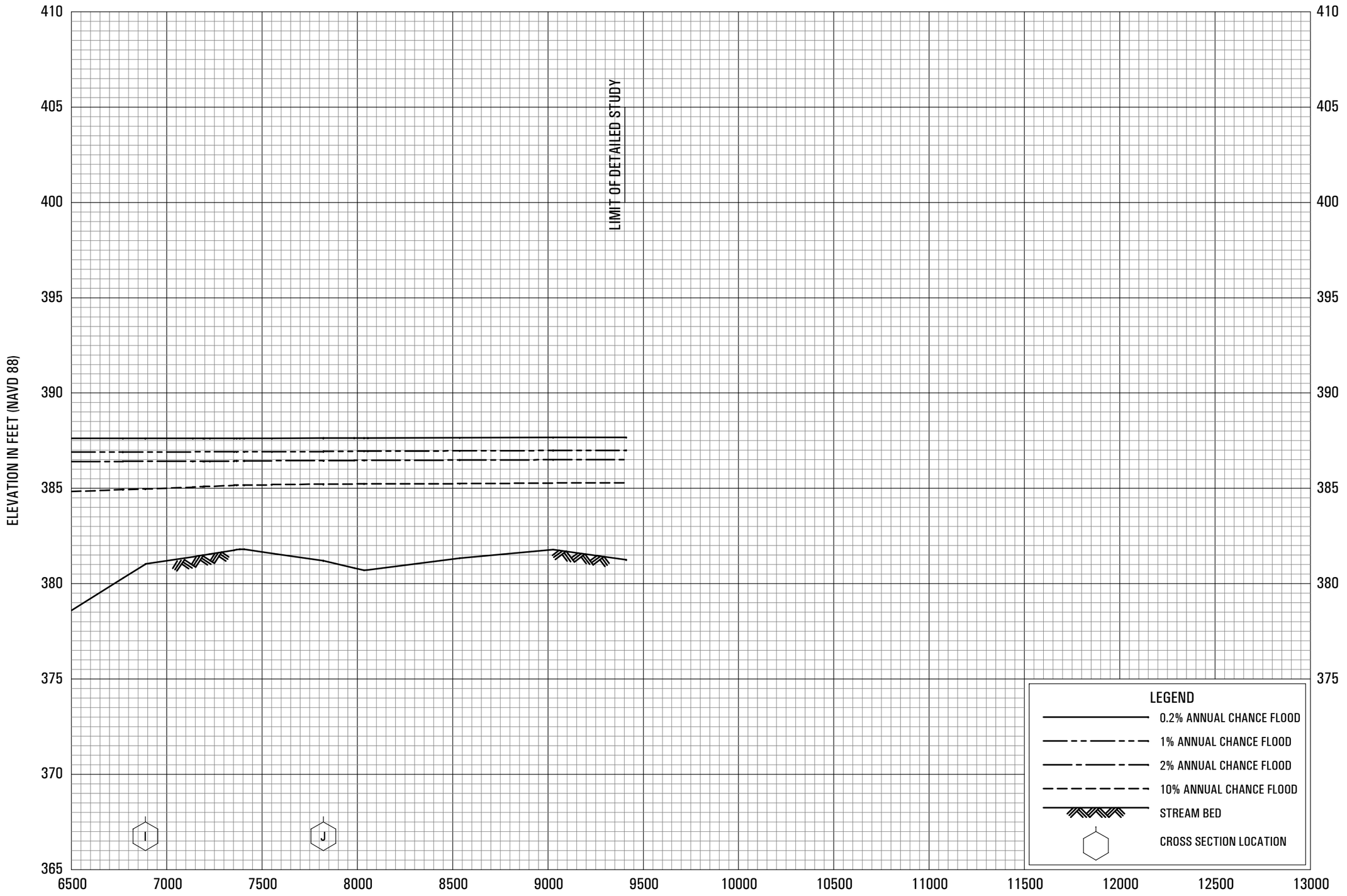
LOCKWOOD DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

017P



FLOOD PROFILES

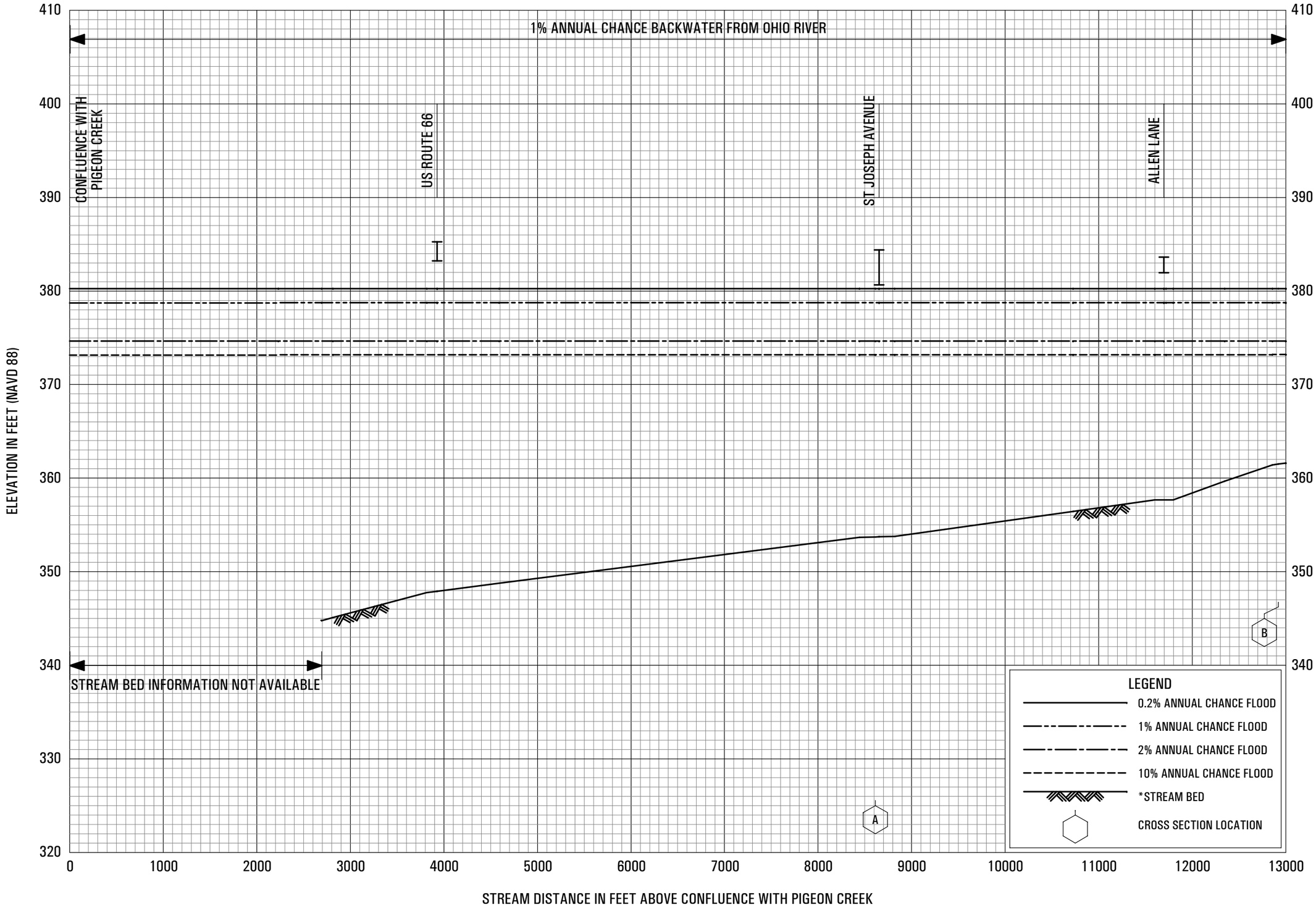
LOCKWOOD DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

018P



FLOOD PROFILES

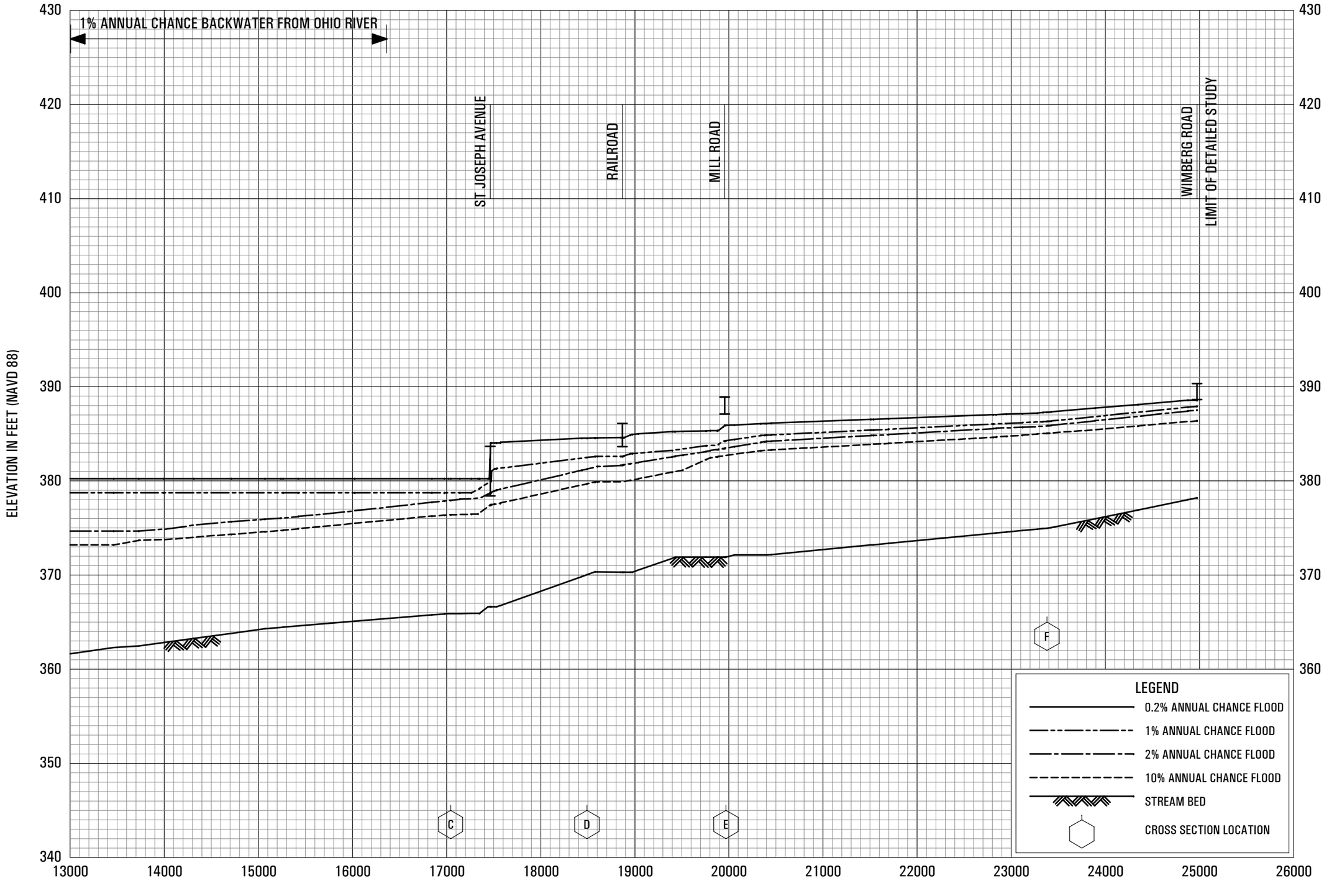
LOCUST CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

019P



FLOOD PROFILES

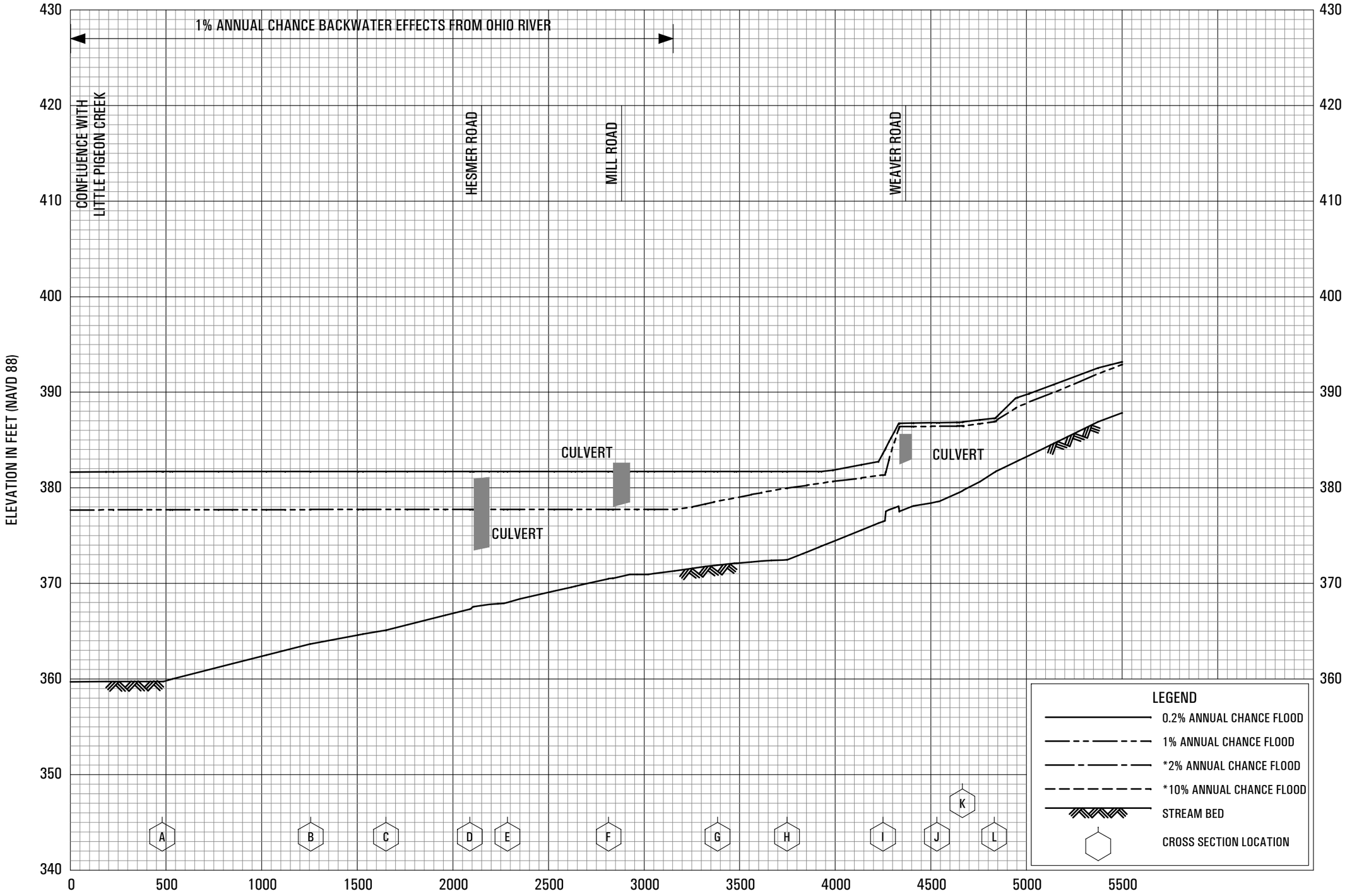
LOCUST CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

020P



FLOOD PROFILES

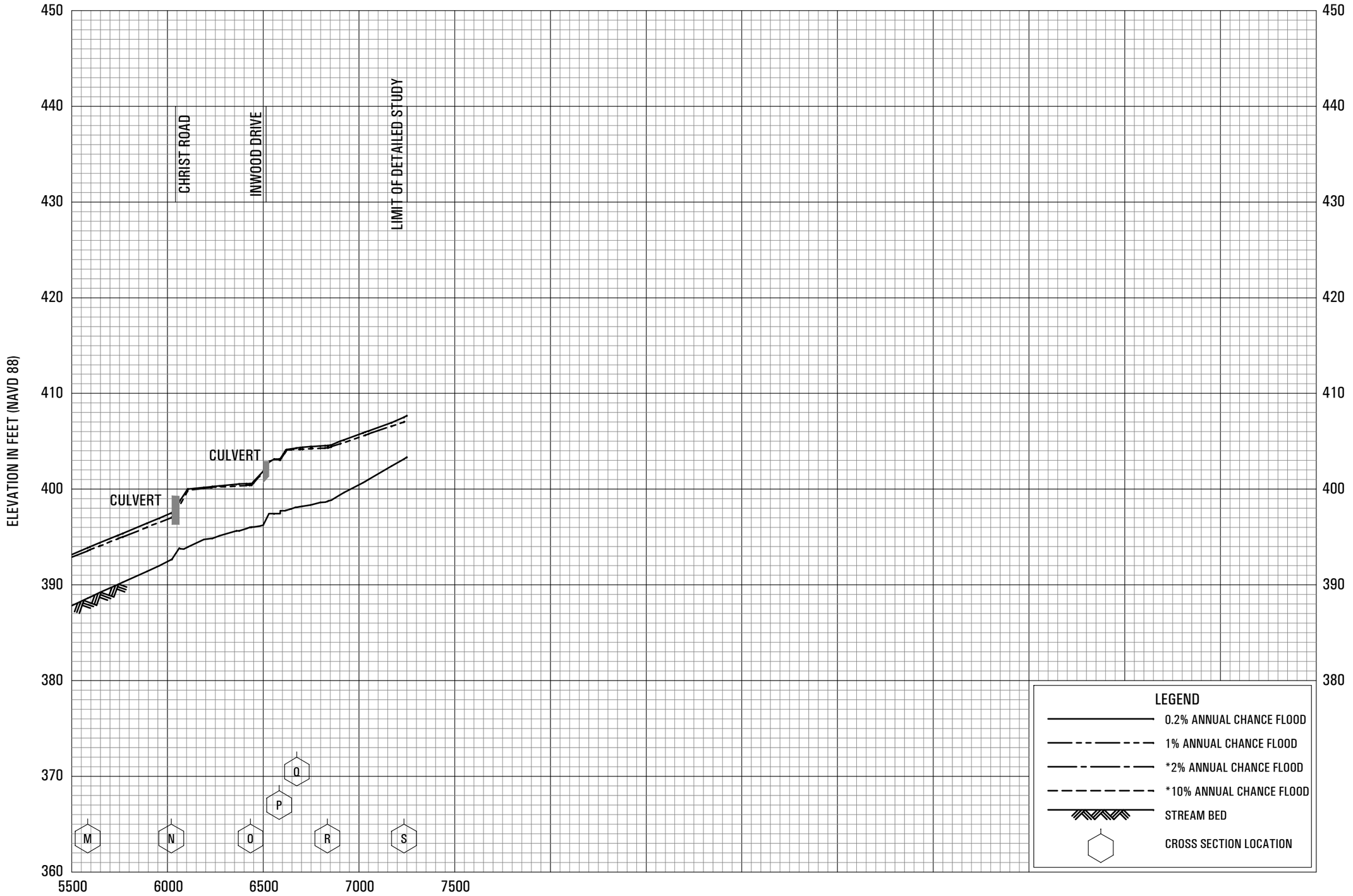
MILL ROAD TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

021P



FLOOD PROFILES

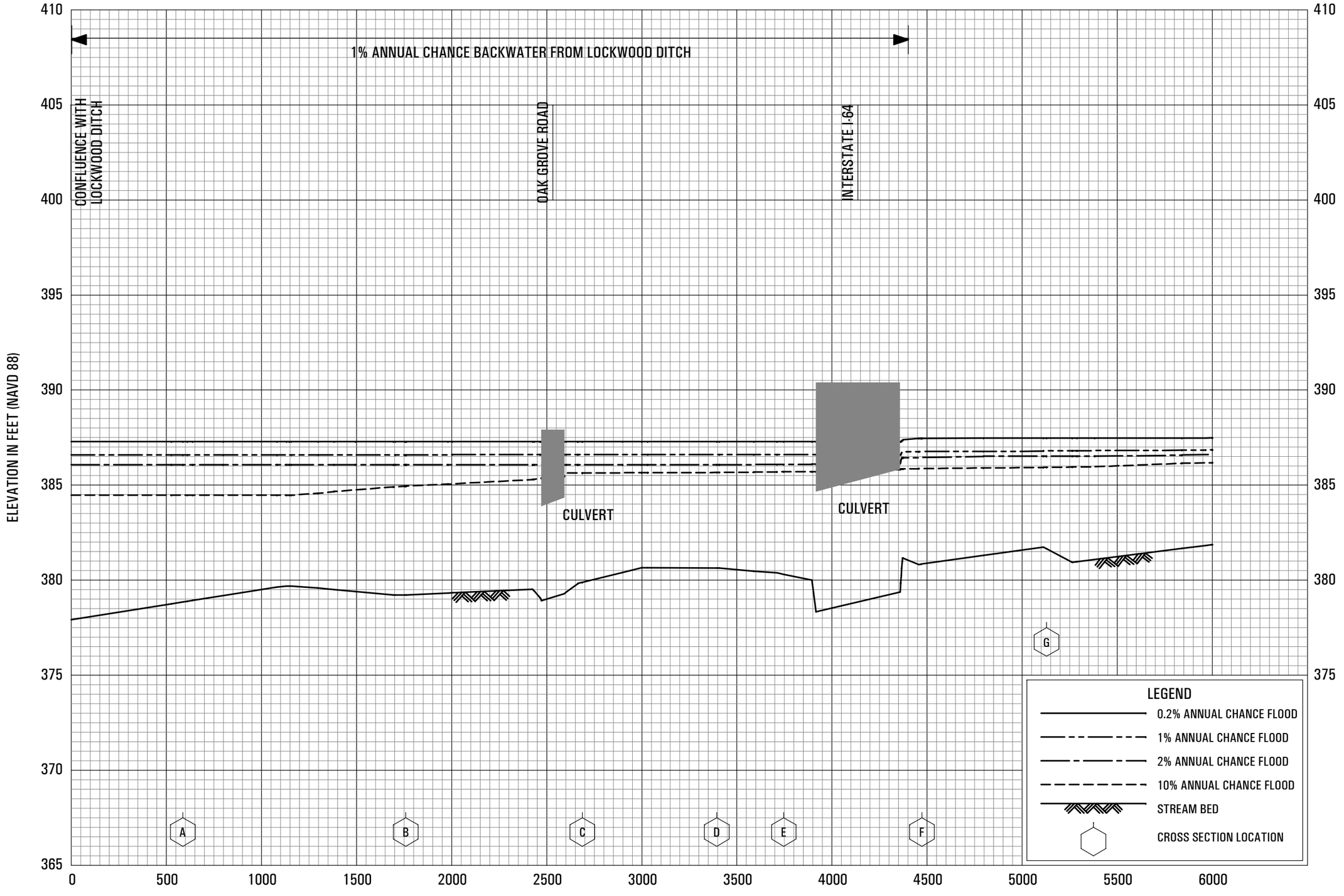
MILL ROAD TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

022P



FLOOD PROFILES

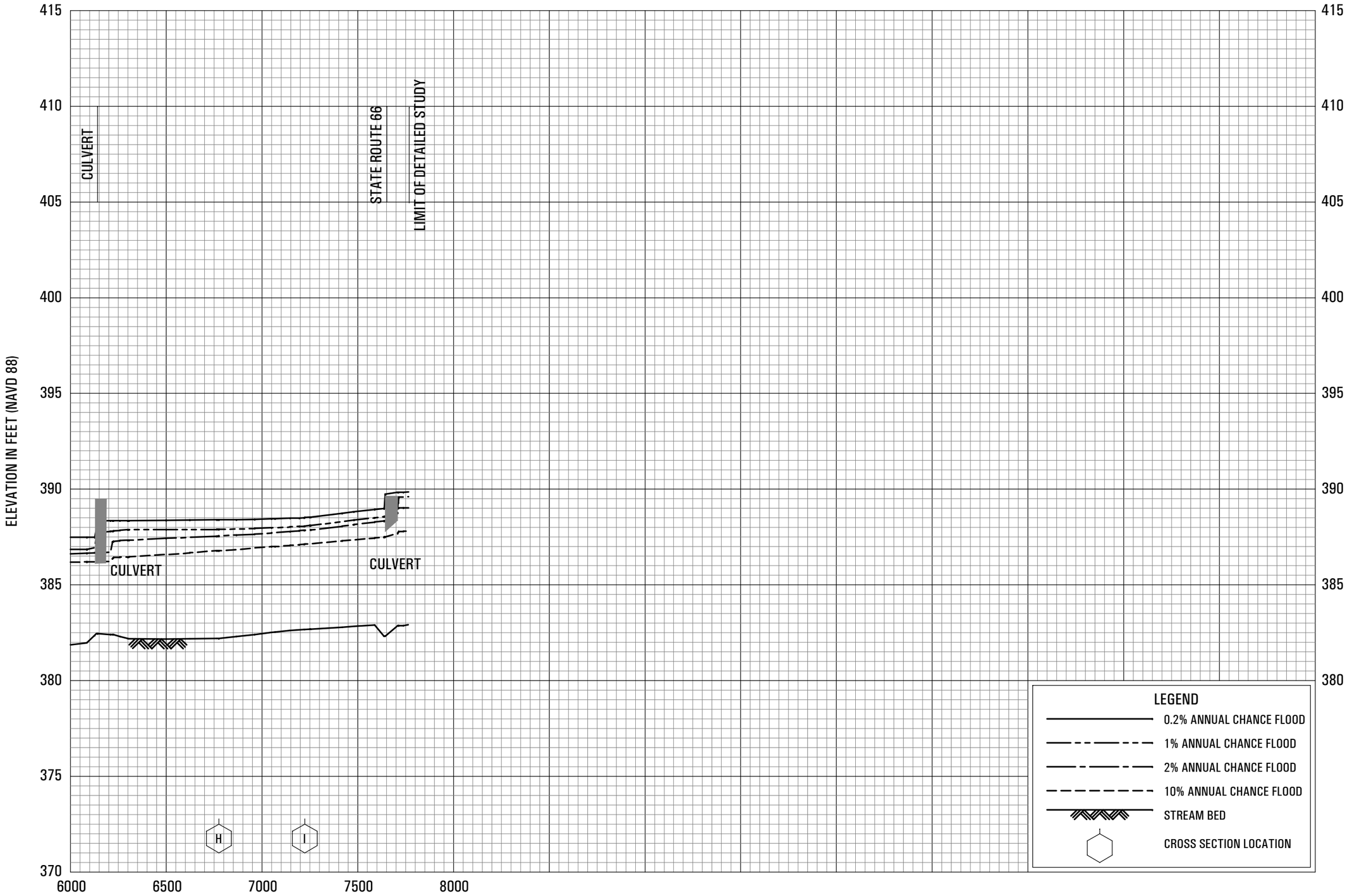
NURENBERN DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

023P



FLOOD PROFILES

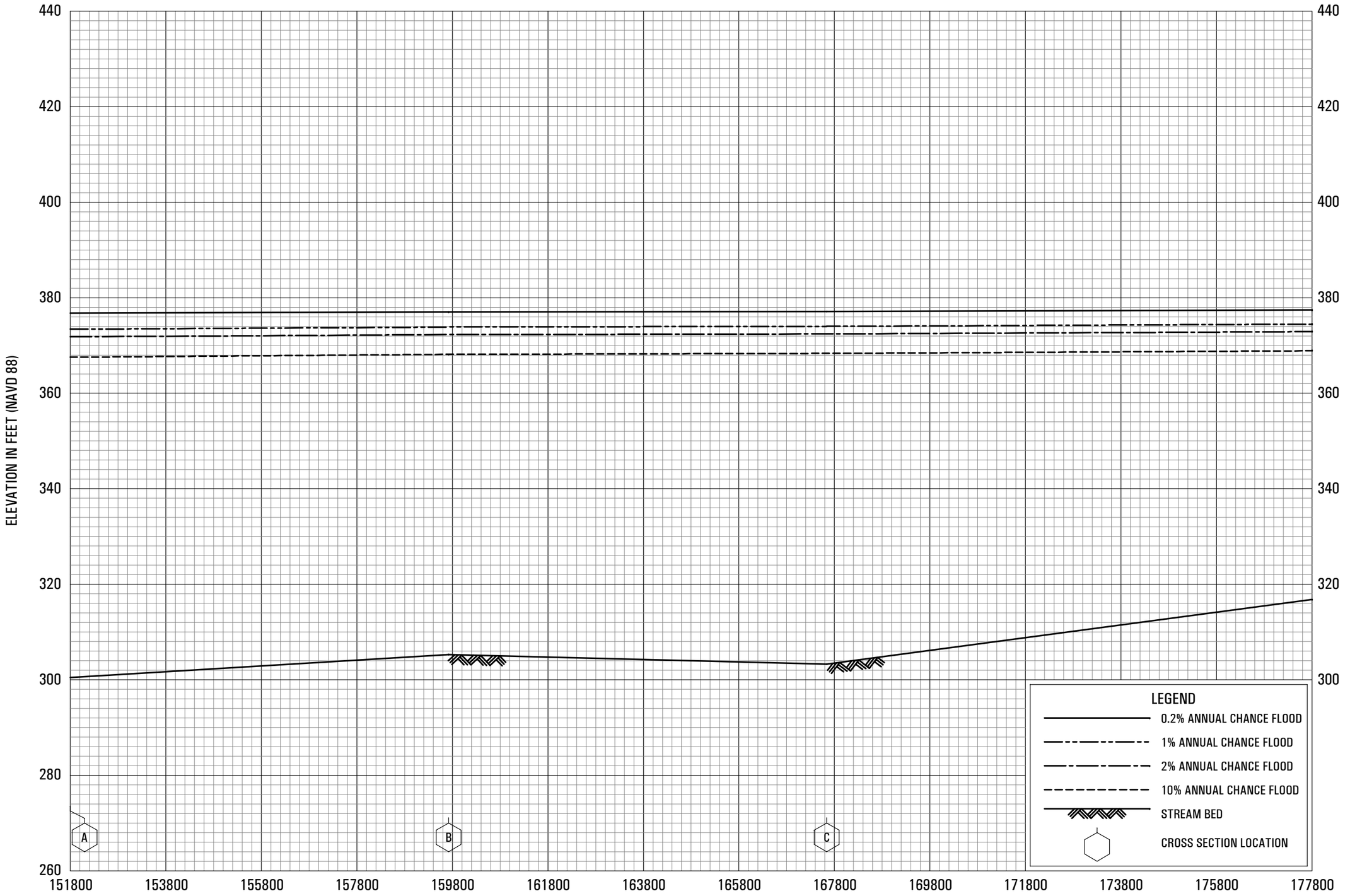
NURENBERN DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

024P



FLOOD PROFILES

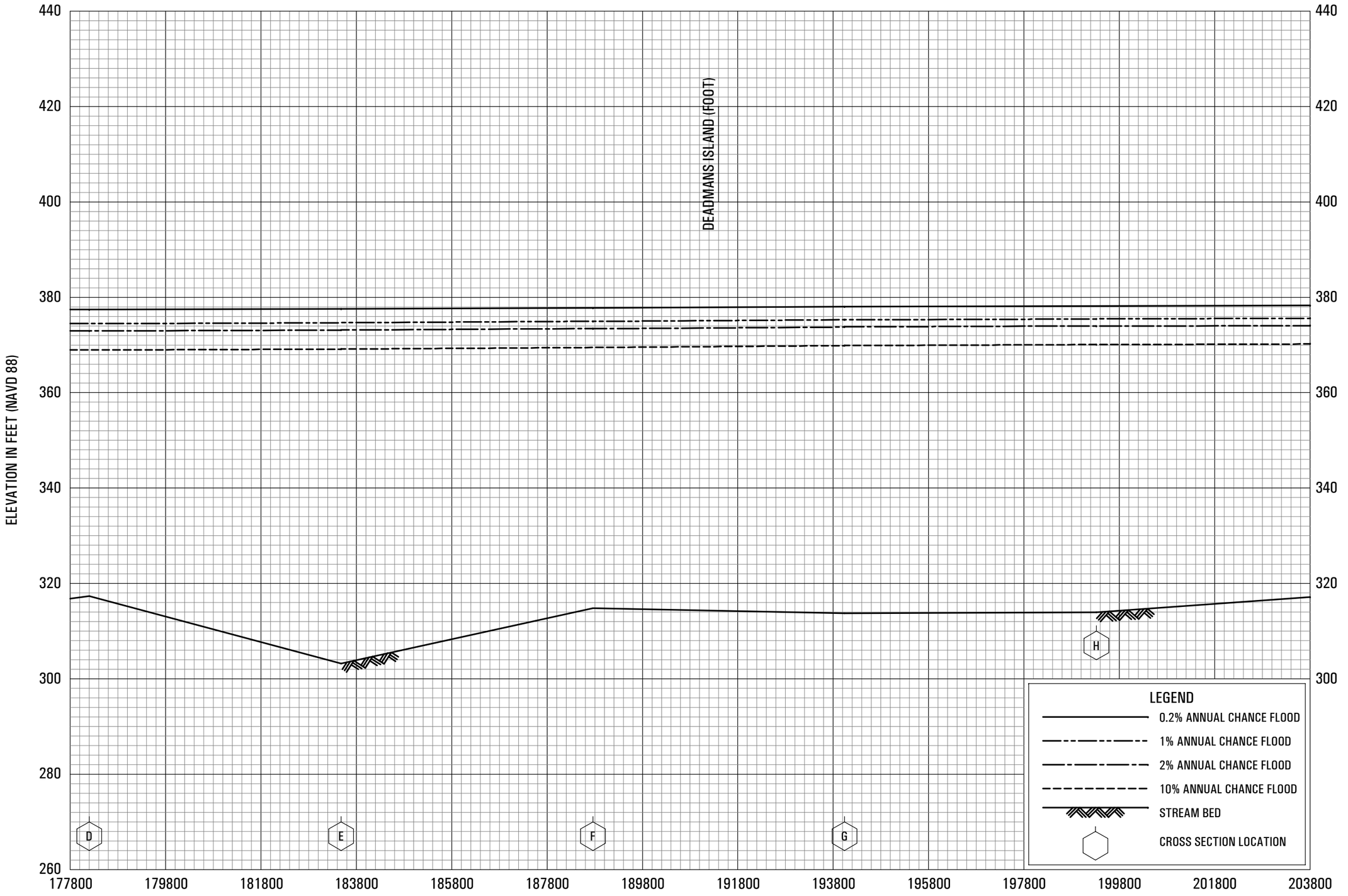
OHIO RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

025P



FLOOD PROFILES

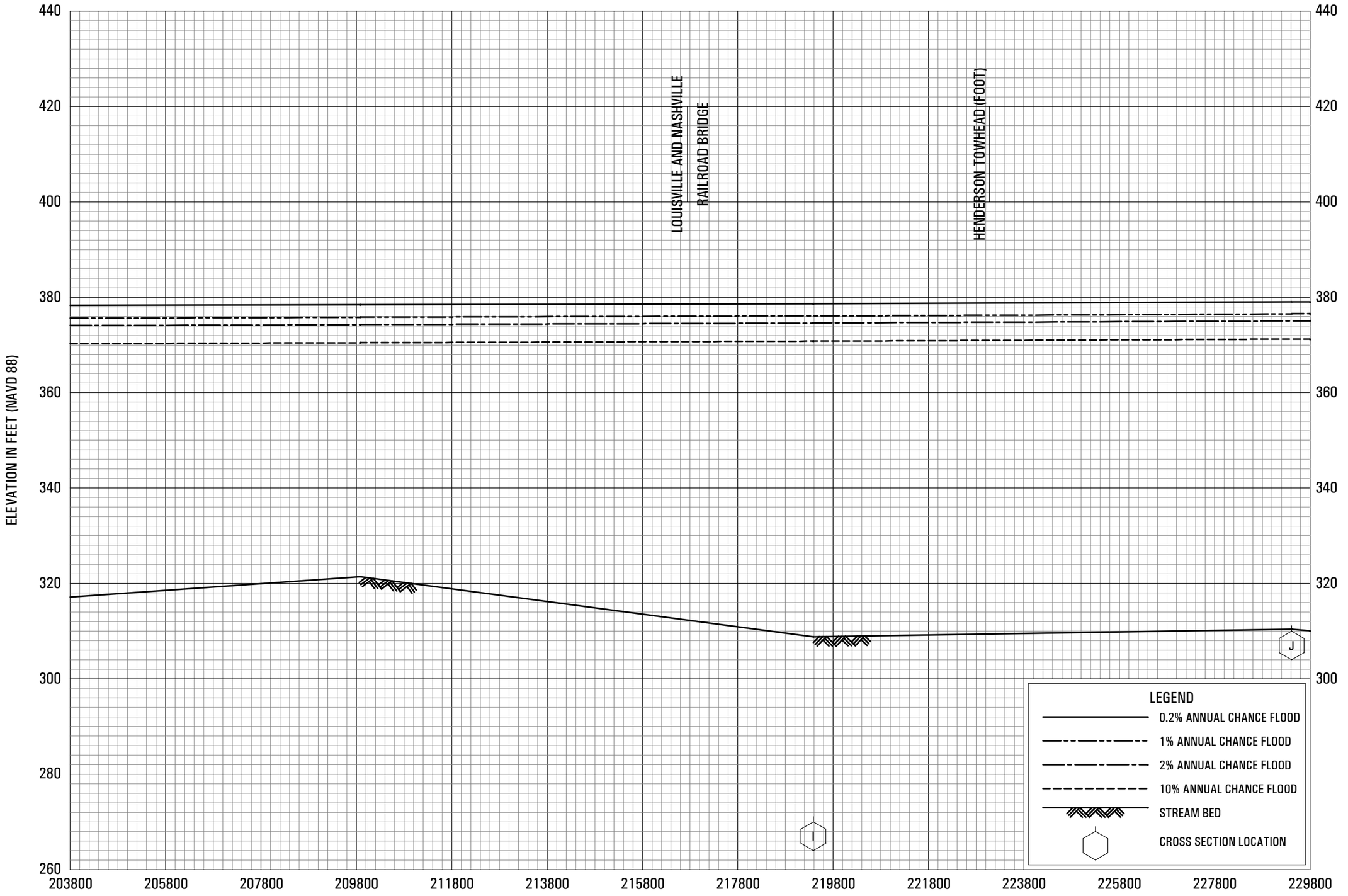
OHIO RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

026P



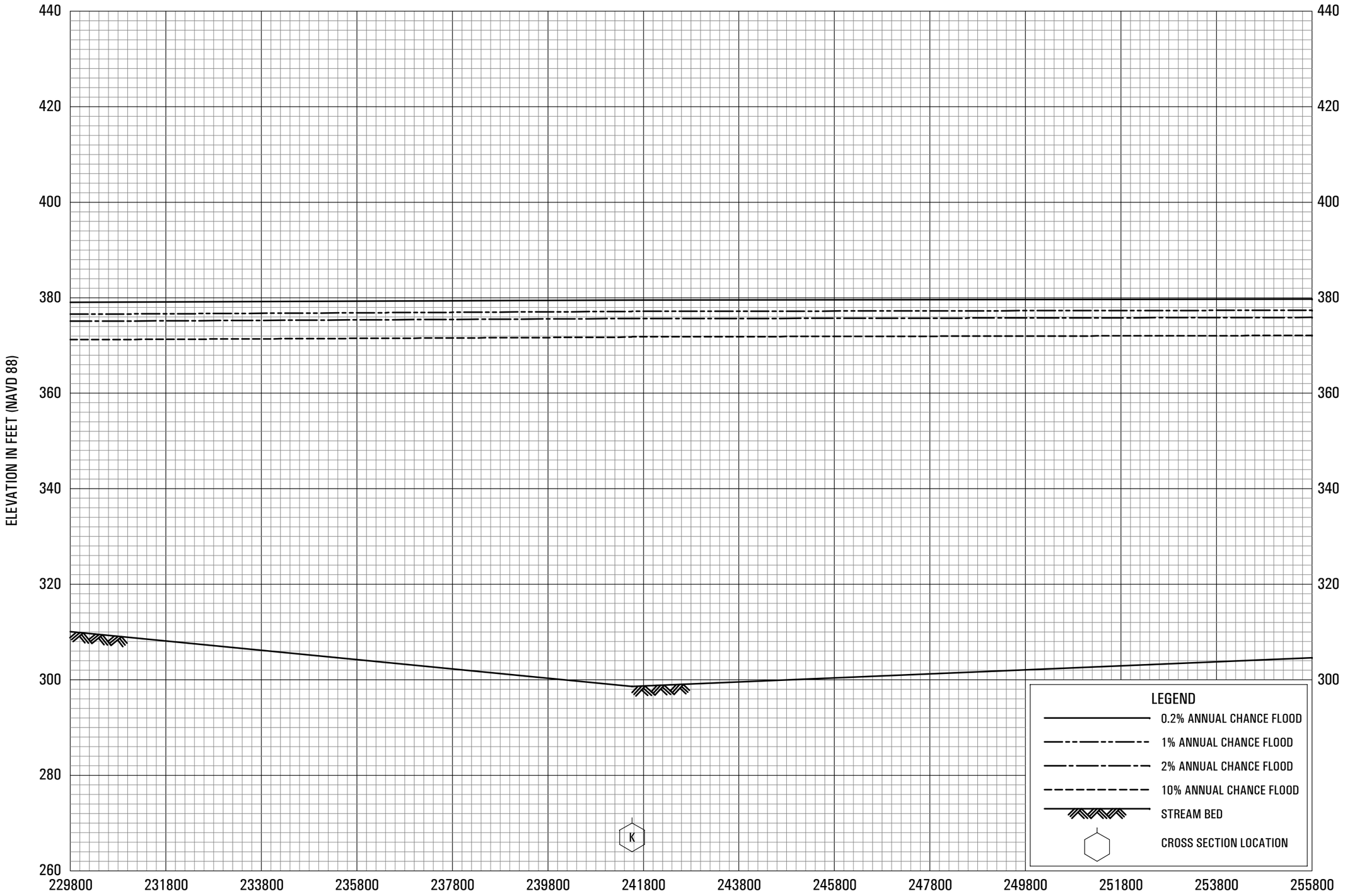
FLOOD PROFILES

OHIO RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS



FLOOD PROFILES

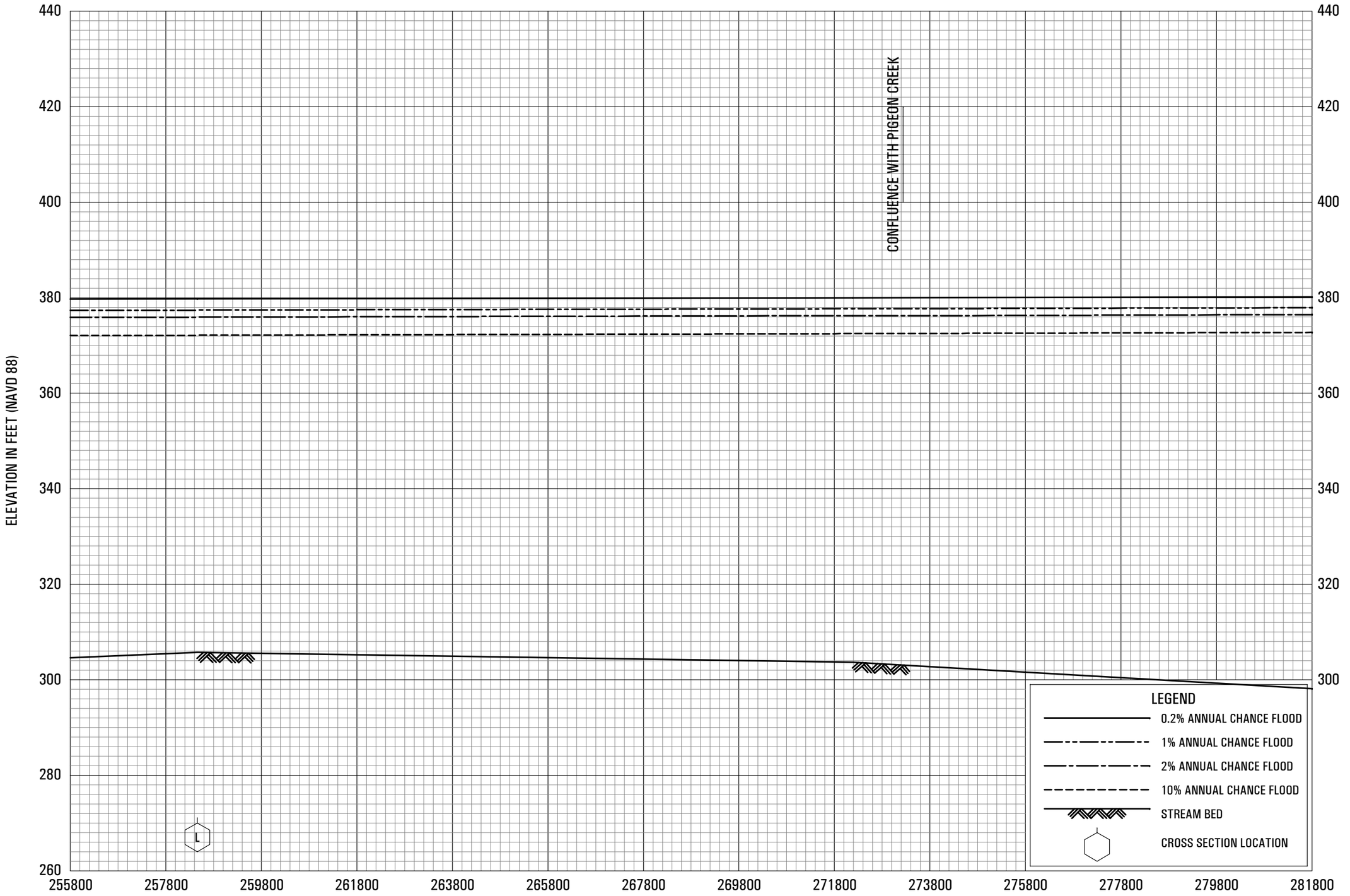
OHIO RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

028P



FLOOD PROFILES

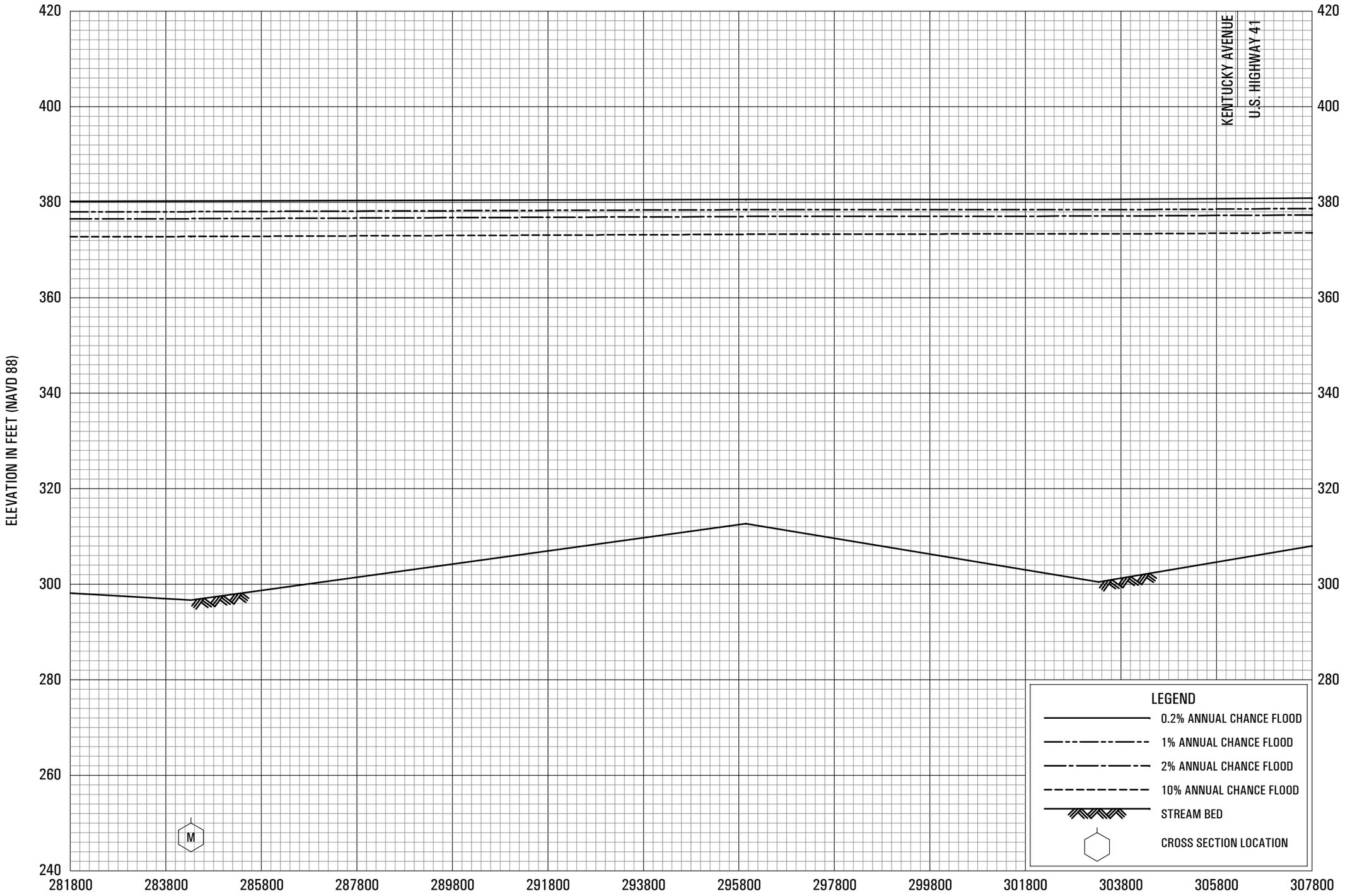
OHIO RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

029P



FLOOD PROFILES

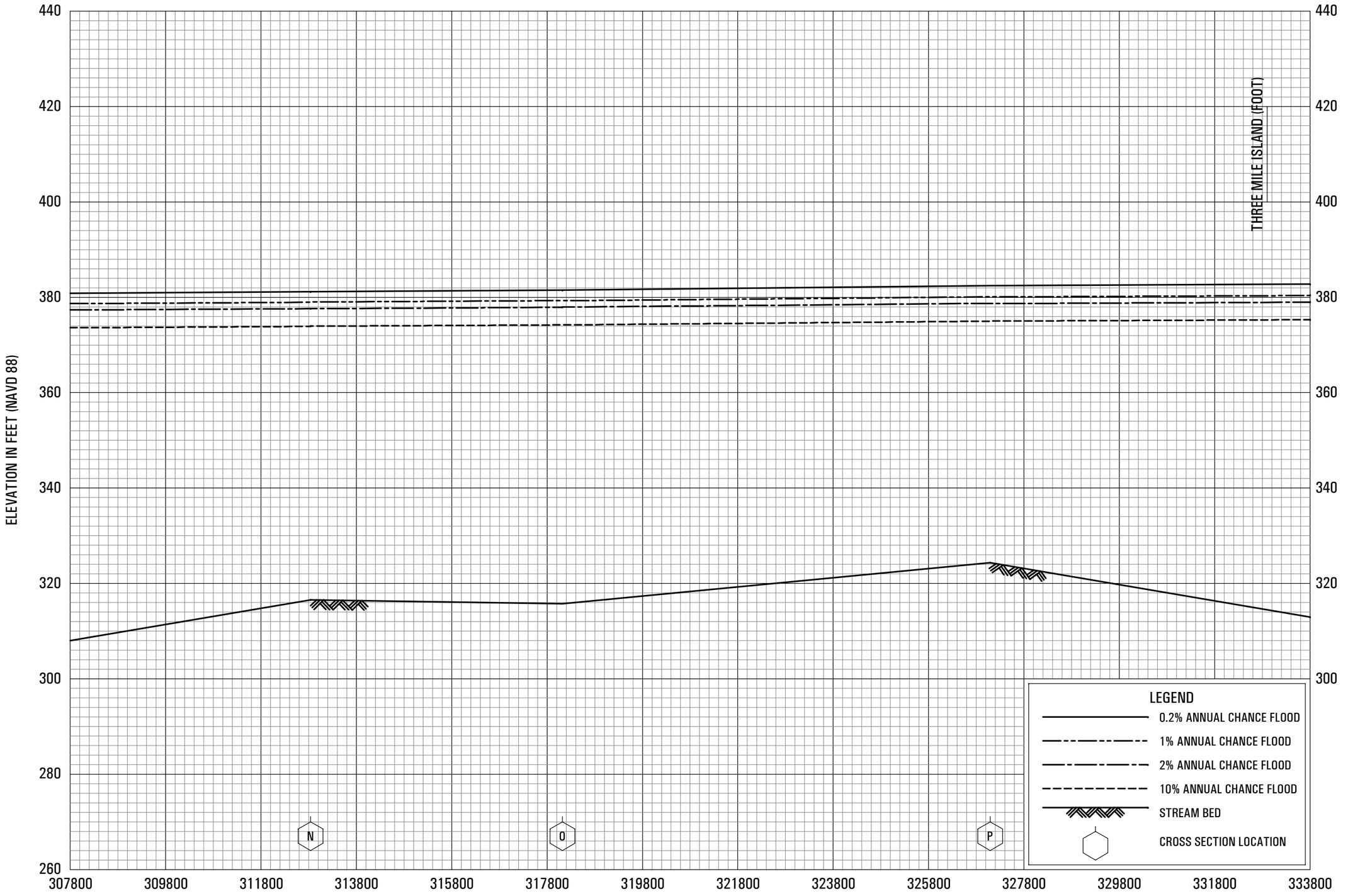
OHIO RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

030P



FLOOD PROFILES

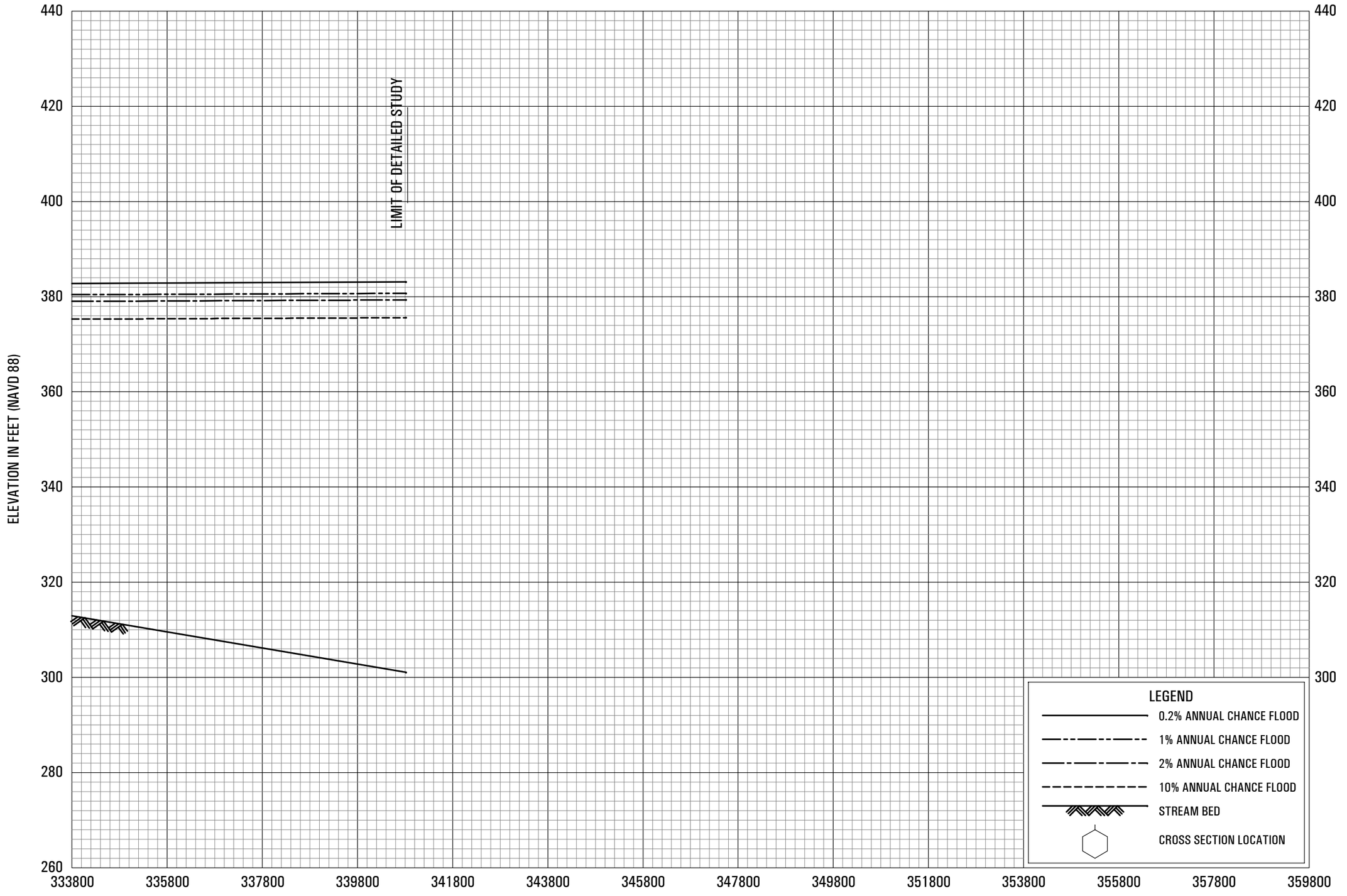
OHIO RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

031P



FLOOD PROFILES

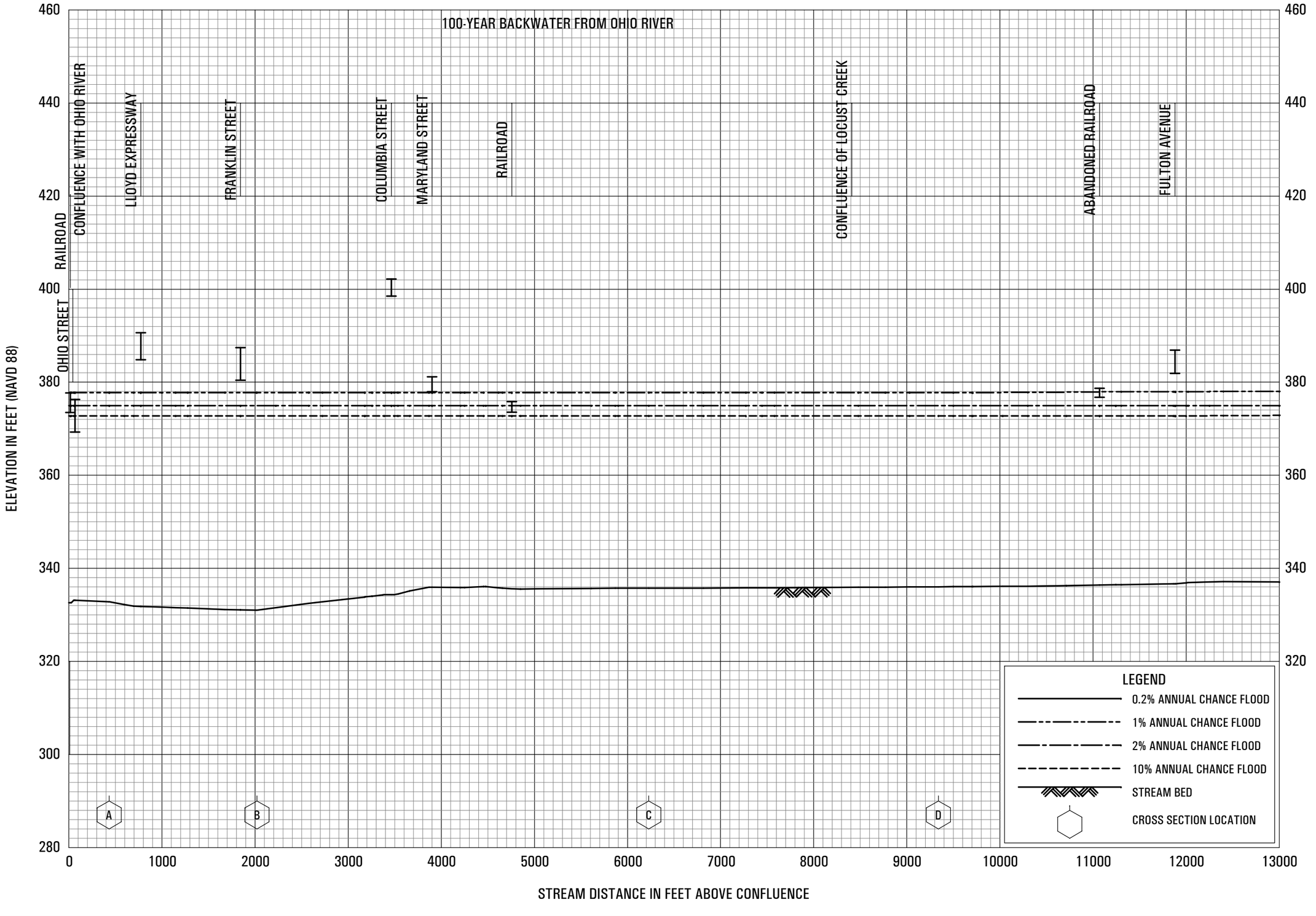
OHIO RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

032P



FLOOD PROFILES

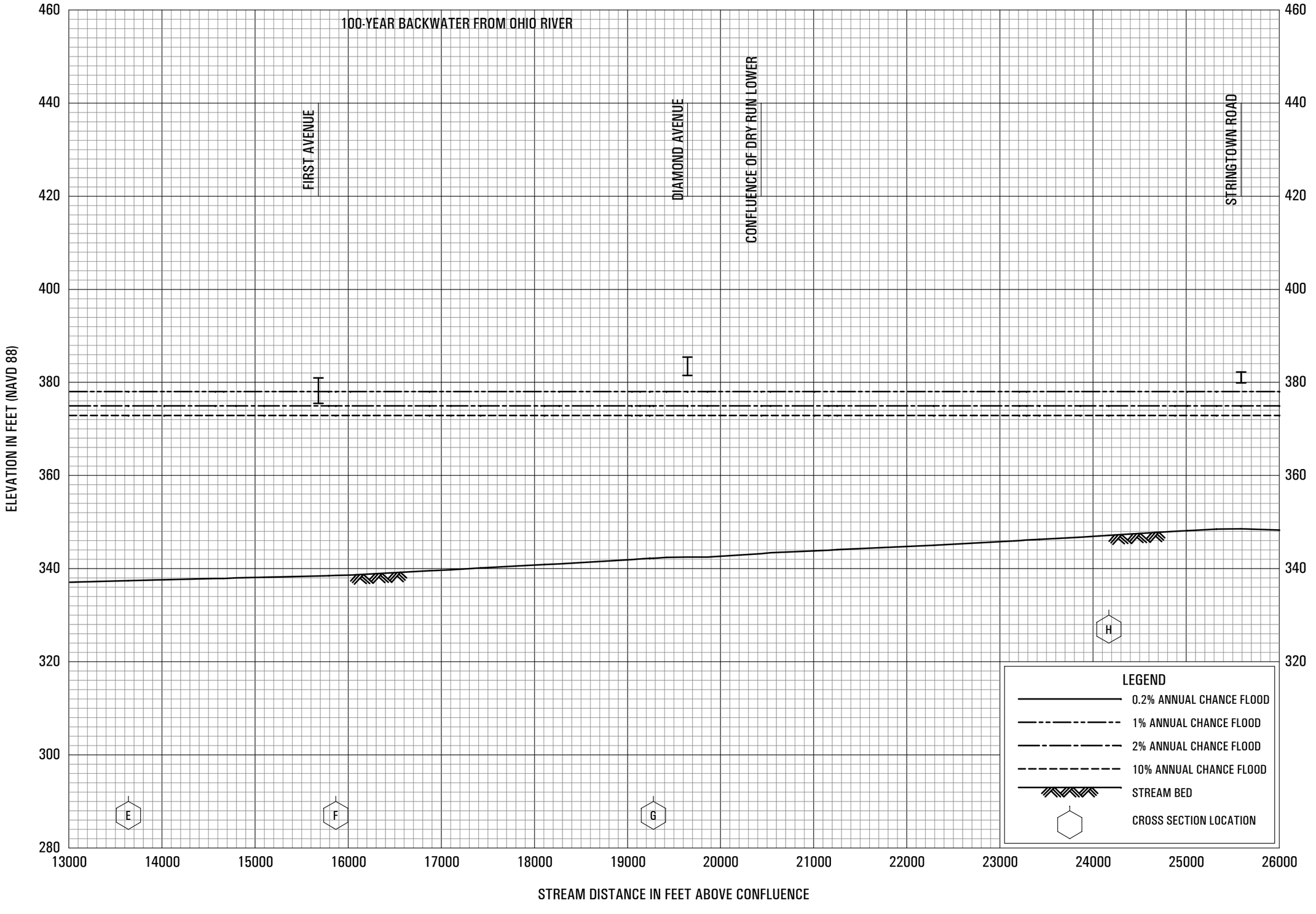
PIGEON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

033P



FLOOD PROFILES

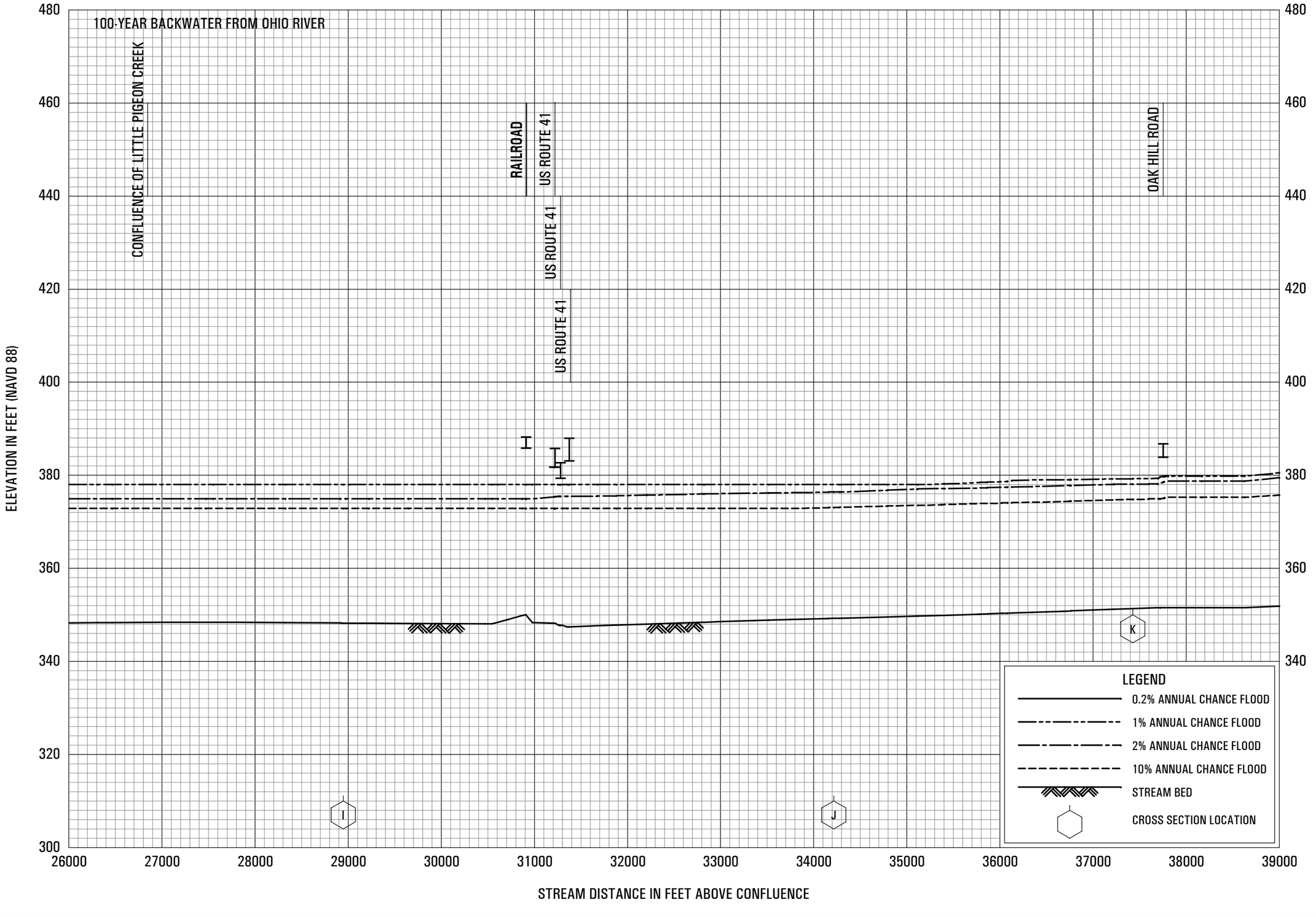
PIGEON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

034P



FLOOD PROFILES

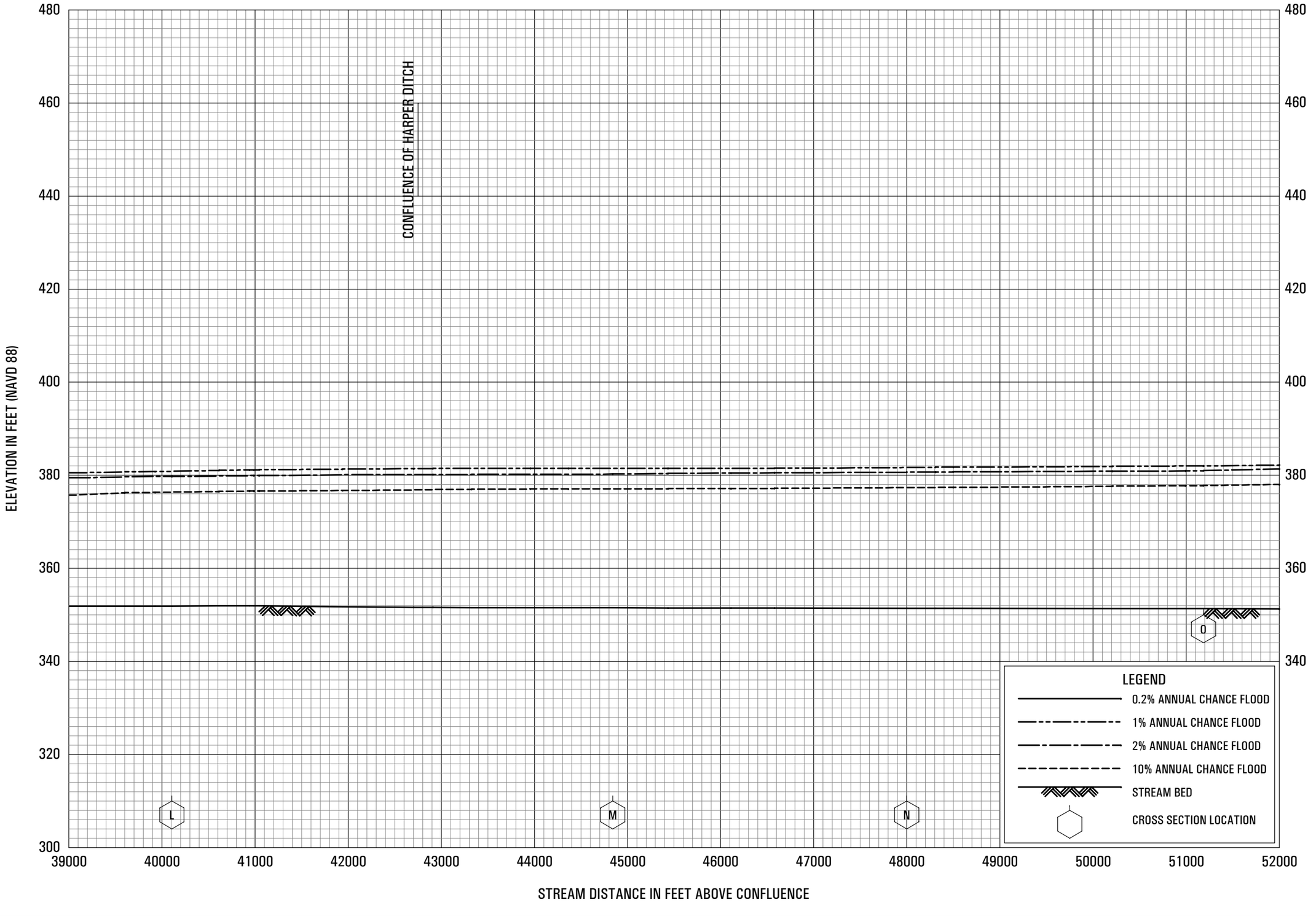
PIGEON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

035P



FLOOD PROFILES

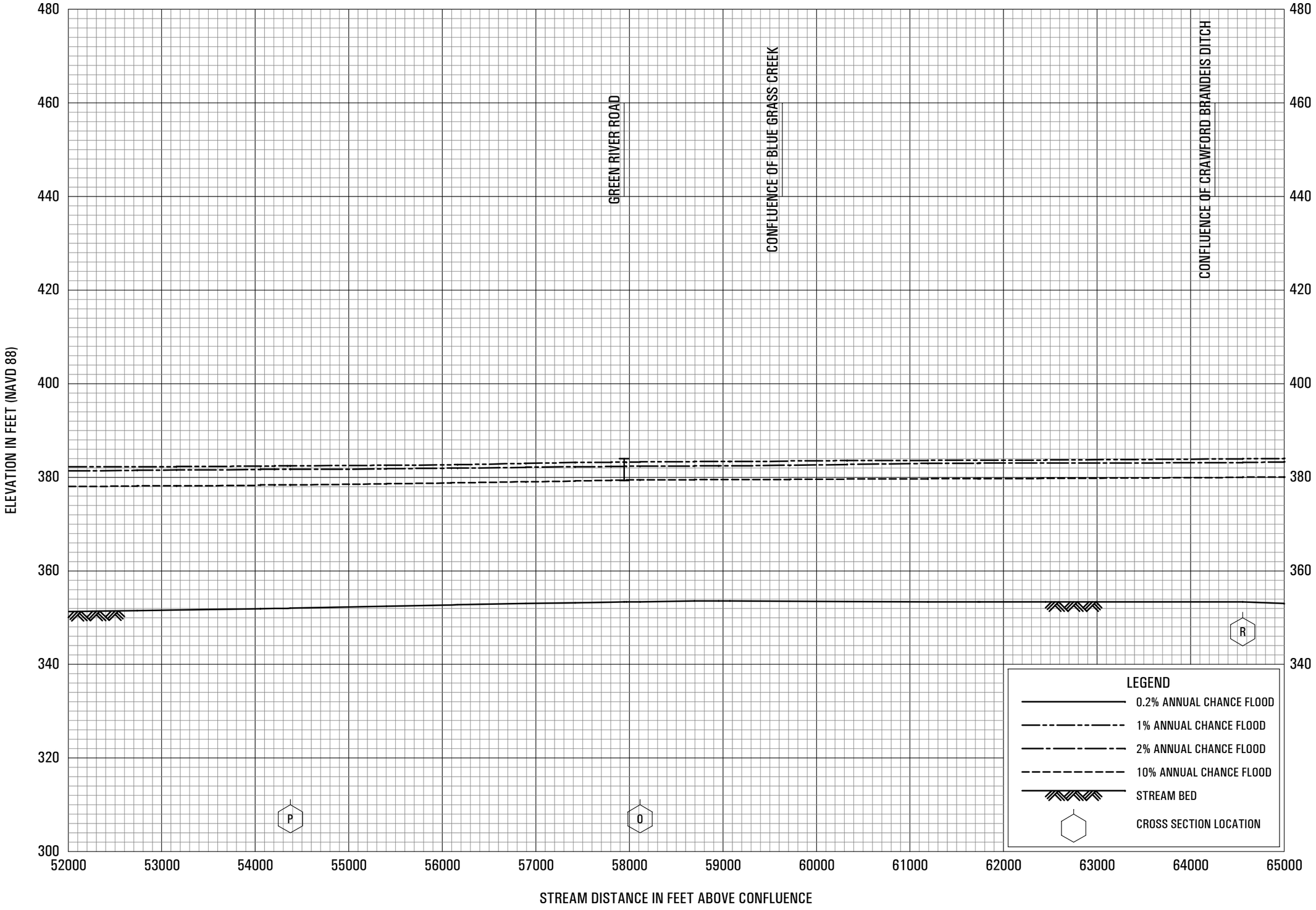
PIGEON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

036P



FLOOD PROFILES

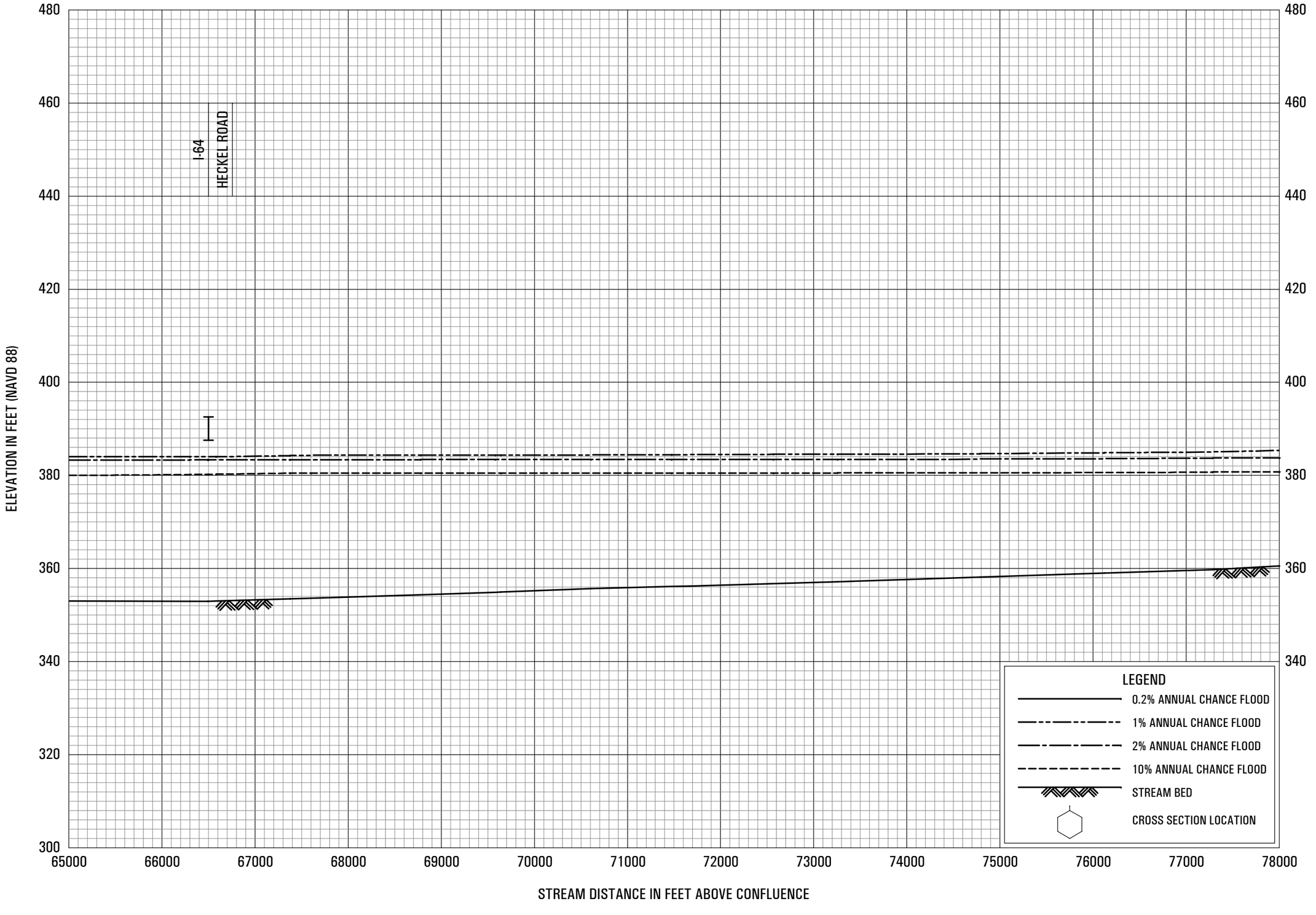
PIGEON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

037P



FLOOD PROFILES

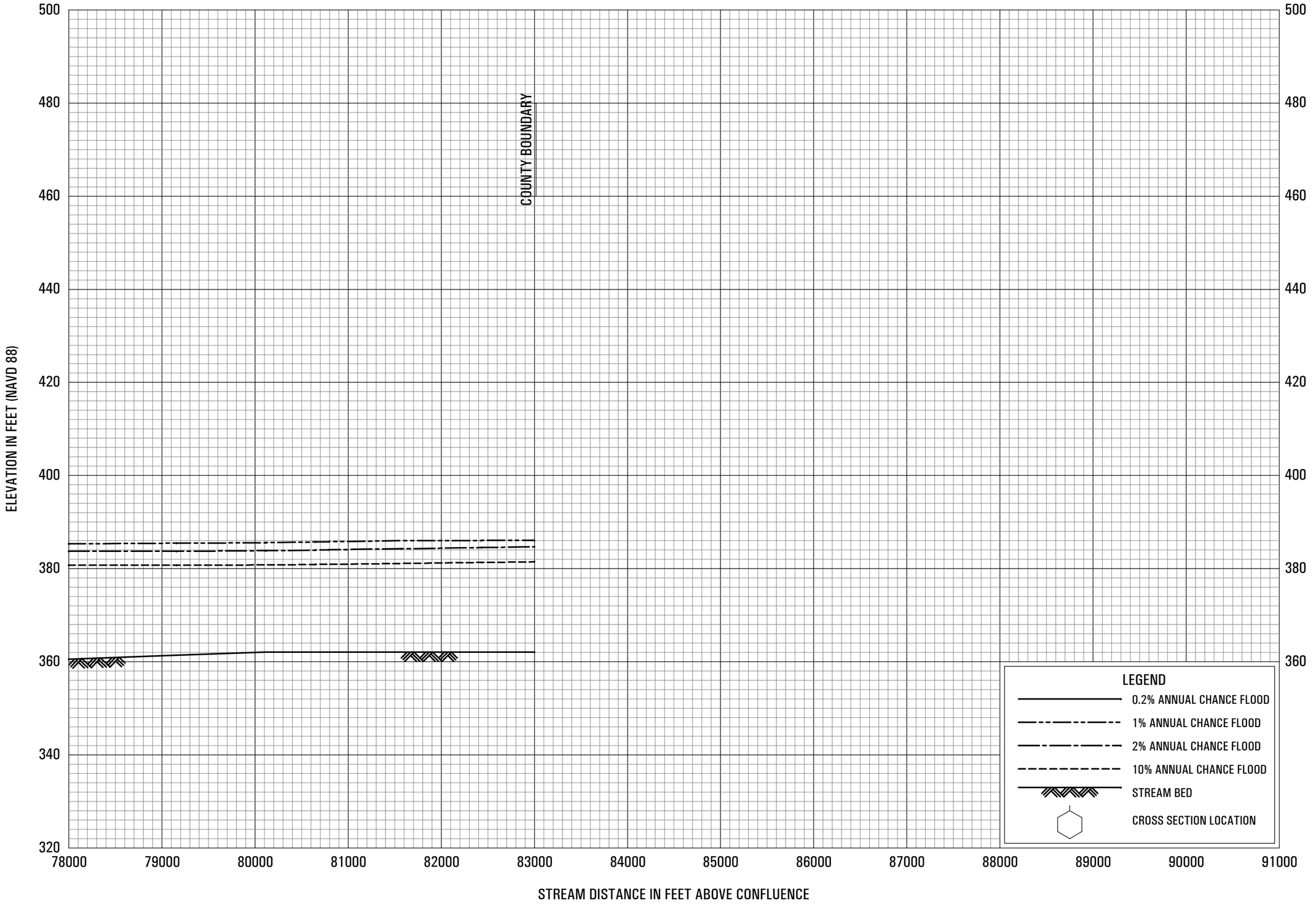
PIGEON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

038P



FLOOD PROFILES

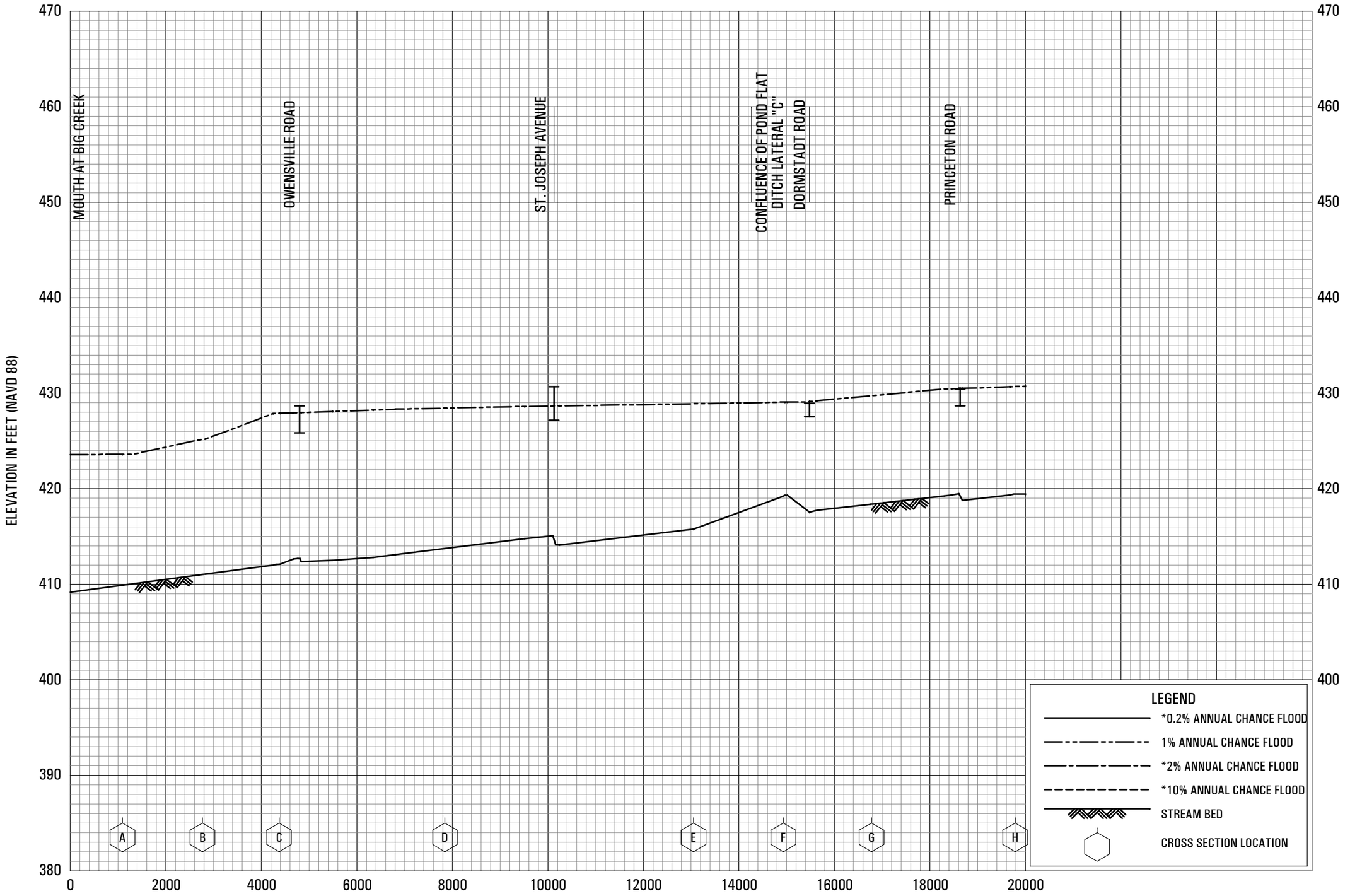
PIGEON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

039P



FLOOD PROFILES

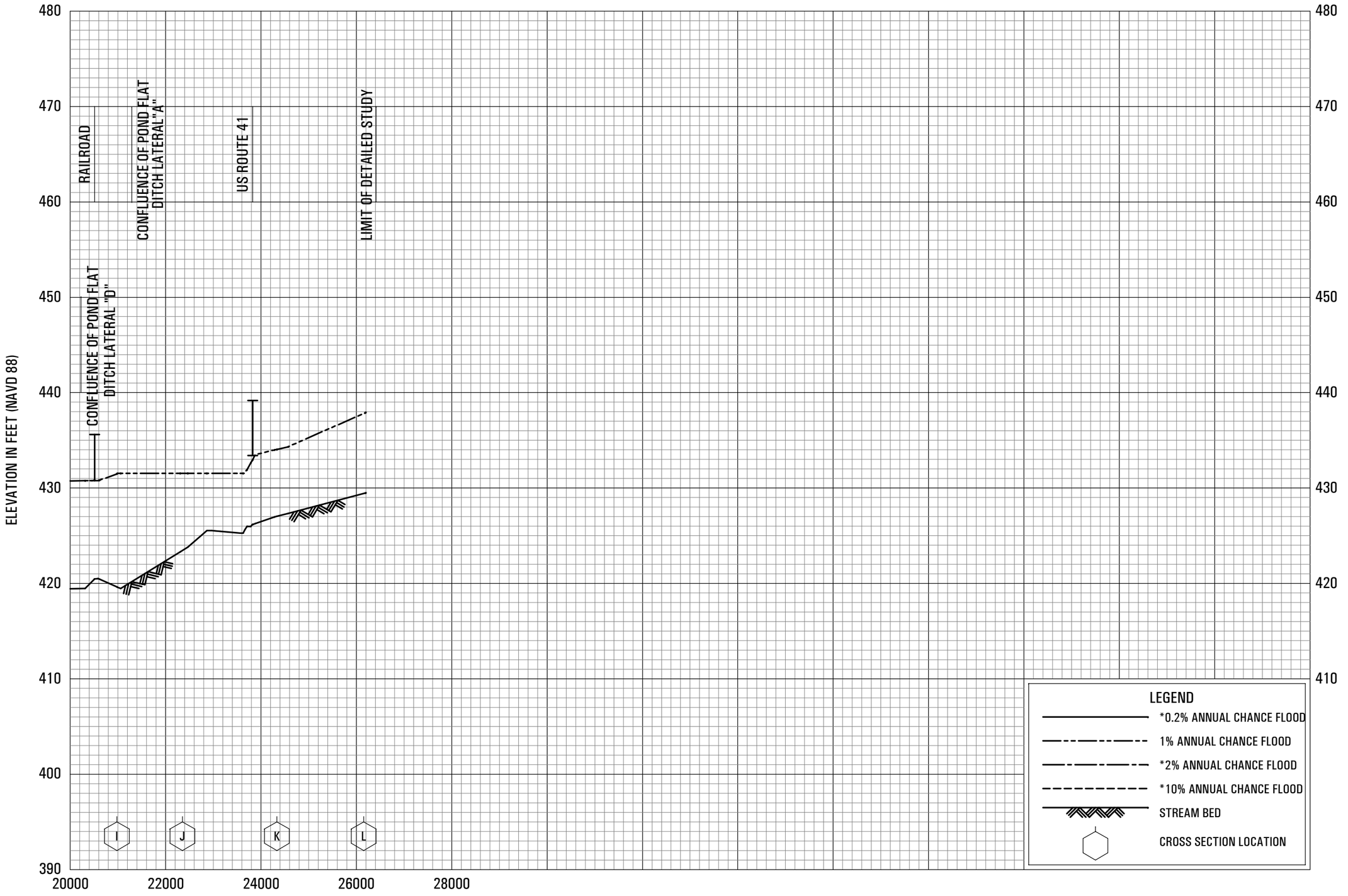
POND FLAT DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

040P



FLOOD PROFILES

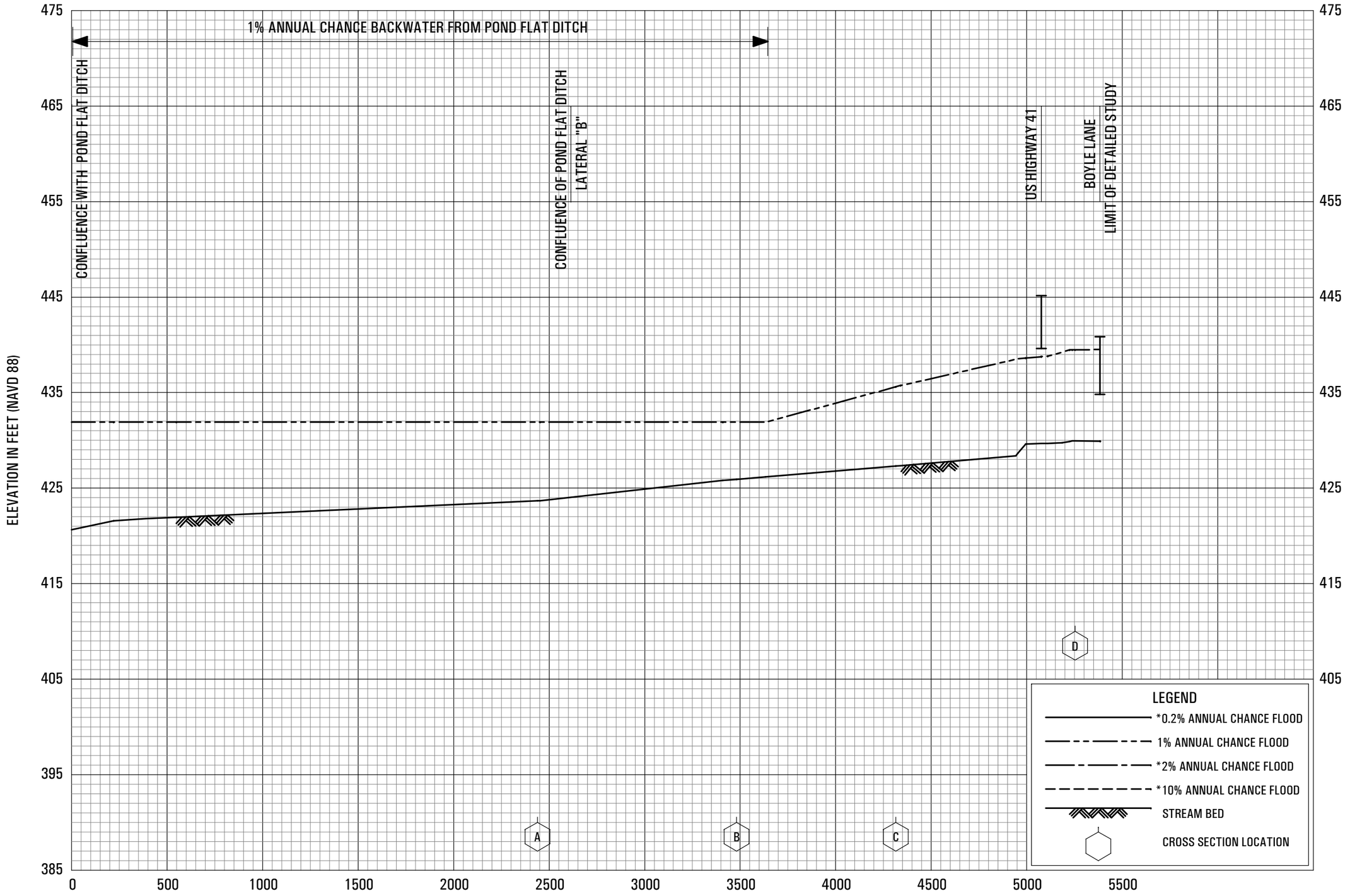
POND FLAT DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

041P



FLOOD PROFILES

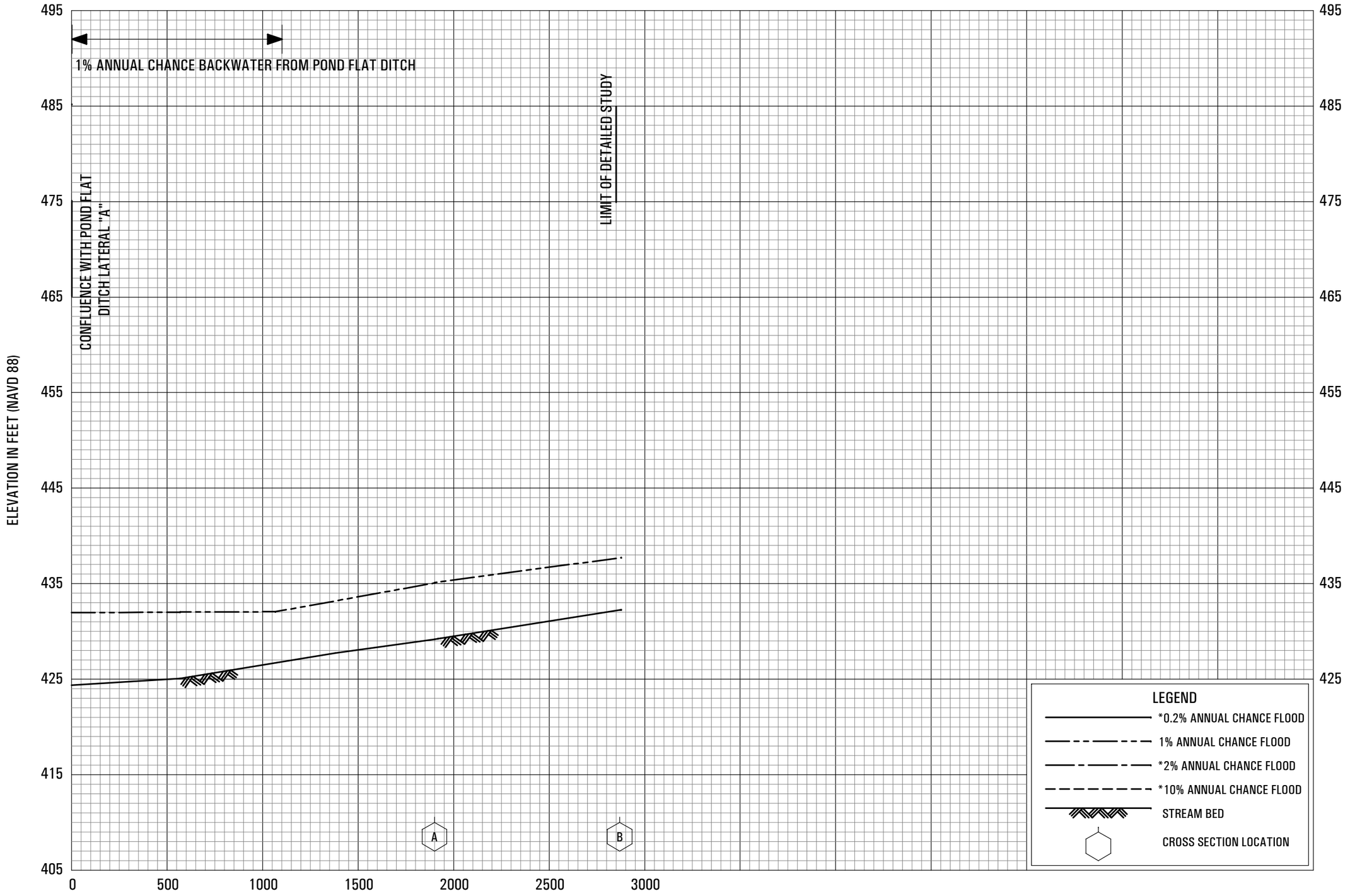
POND FLAT DITCH LATERAL "A"

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

042P



* DATA NOT AVAILABLE

FLOOD PROFILES

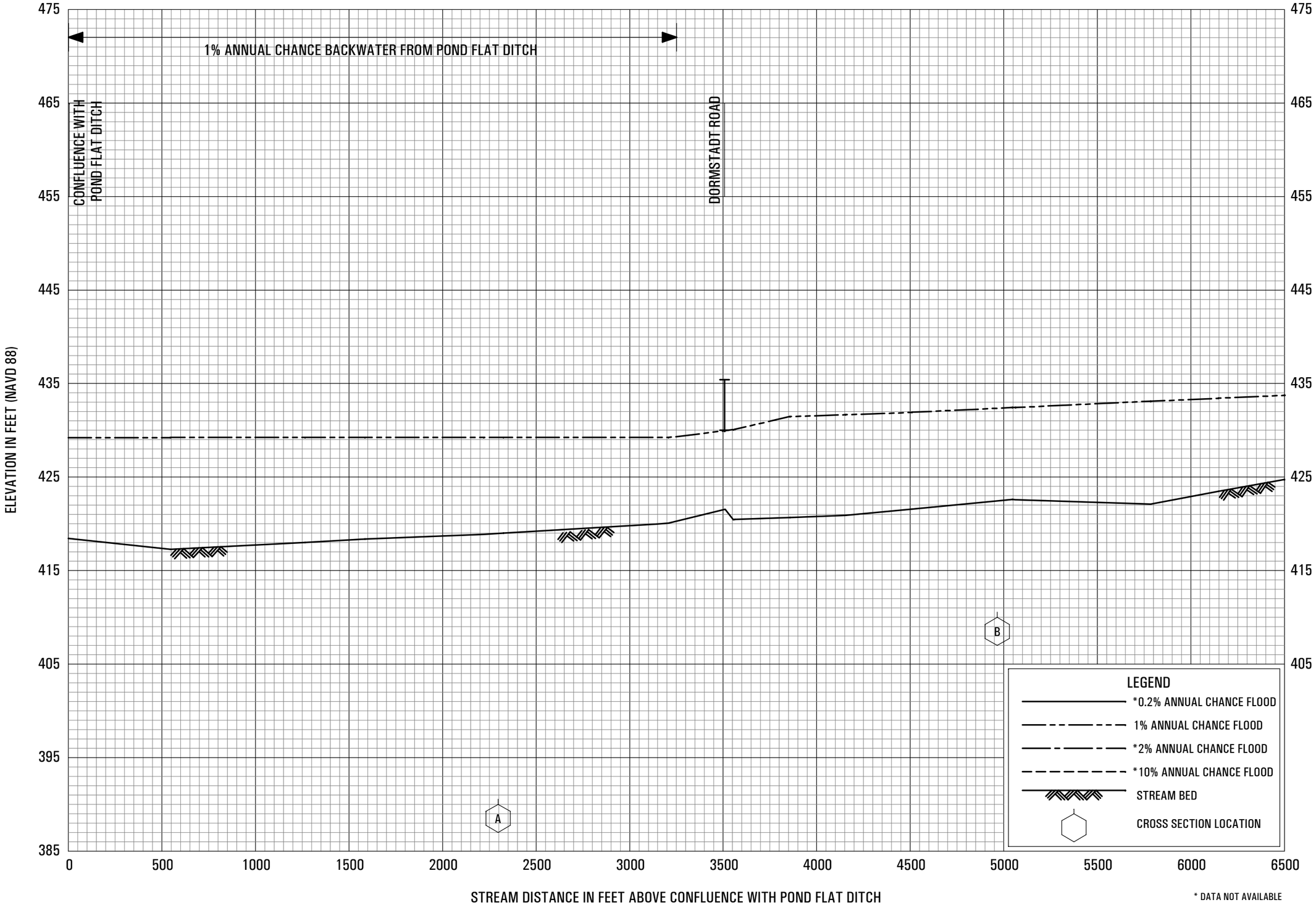
POND FLAT DITCH LATERAL "B"

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

043P



FLOOD PROFILES

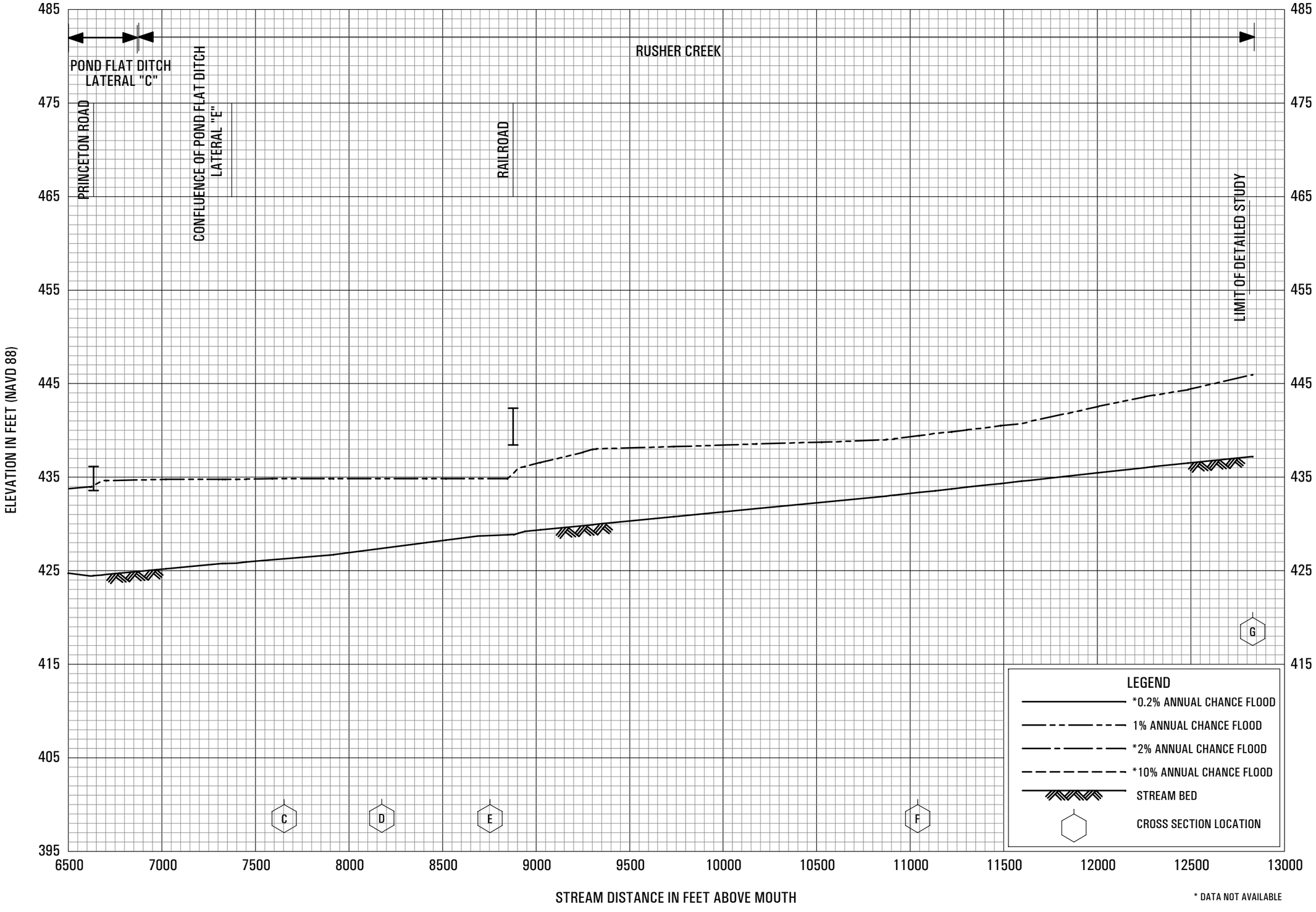
POND FLAT DITCH LATERAL "C"

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

044P



* DATA NOT AVAILABLE

FLOOD PROFILES

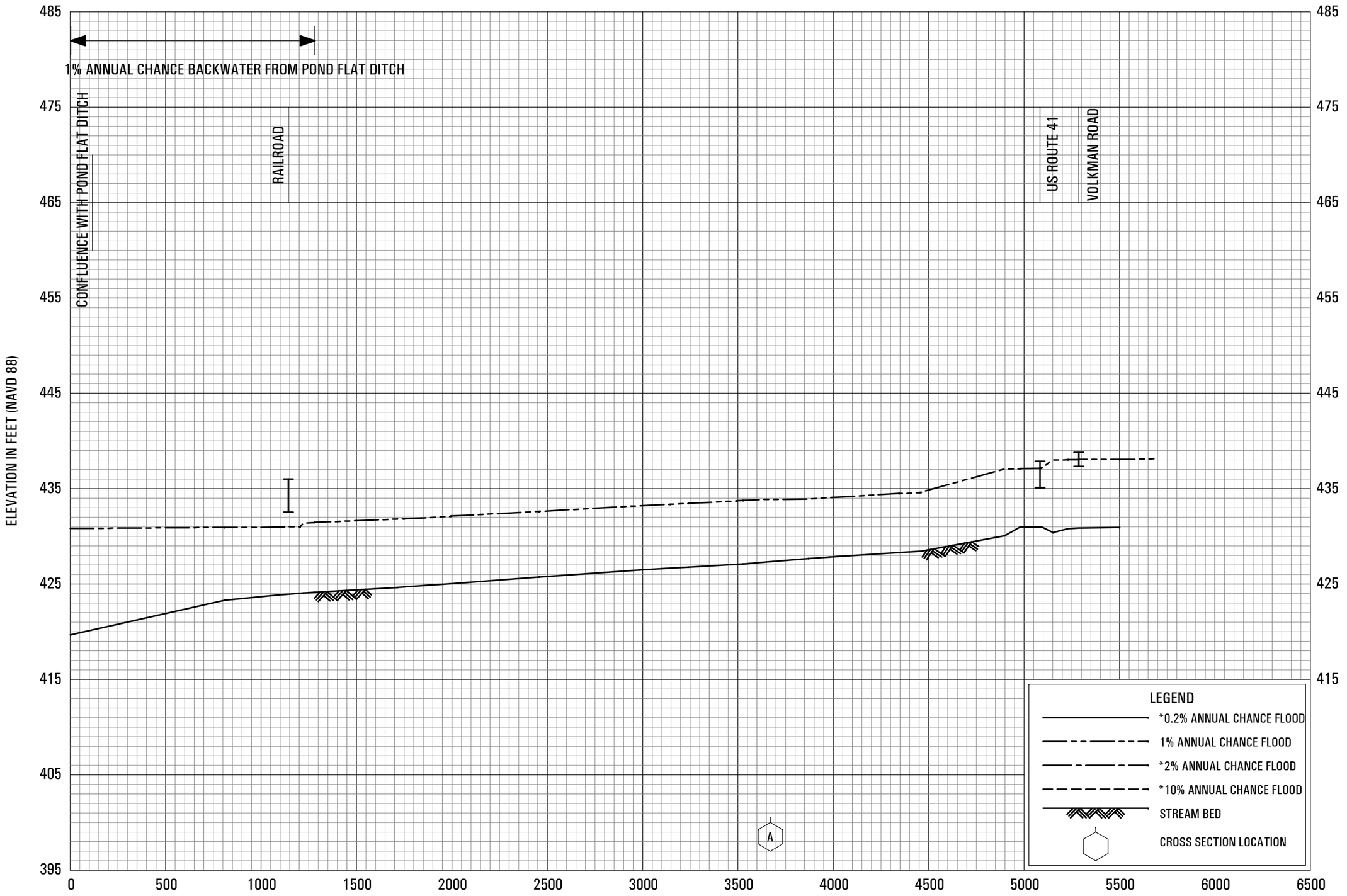
POND FLAT DITCH LATERAL "C" - RUSHER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

045P



FLOOD PROFILES

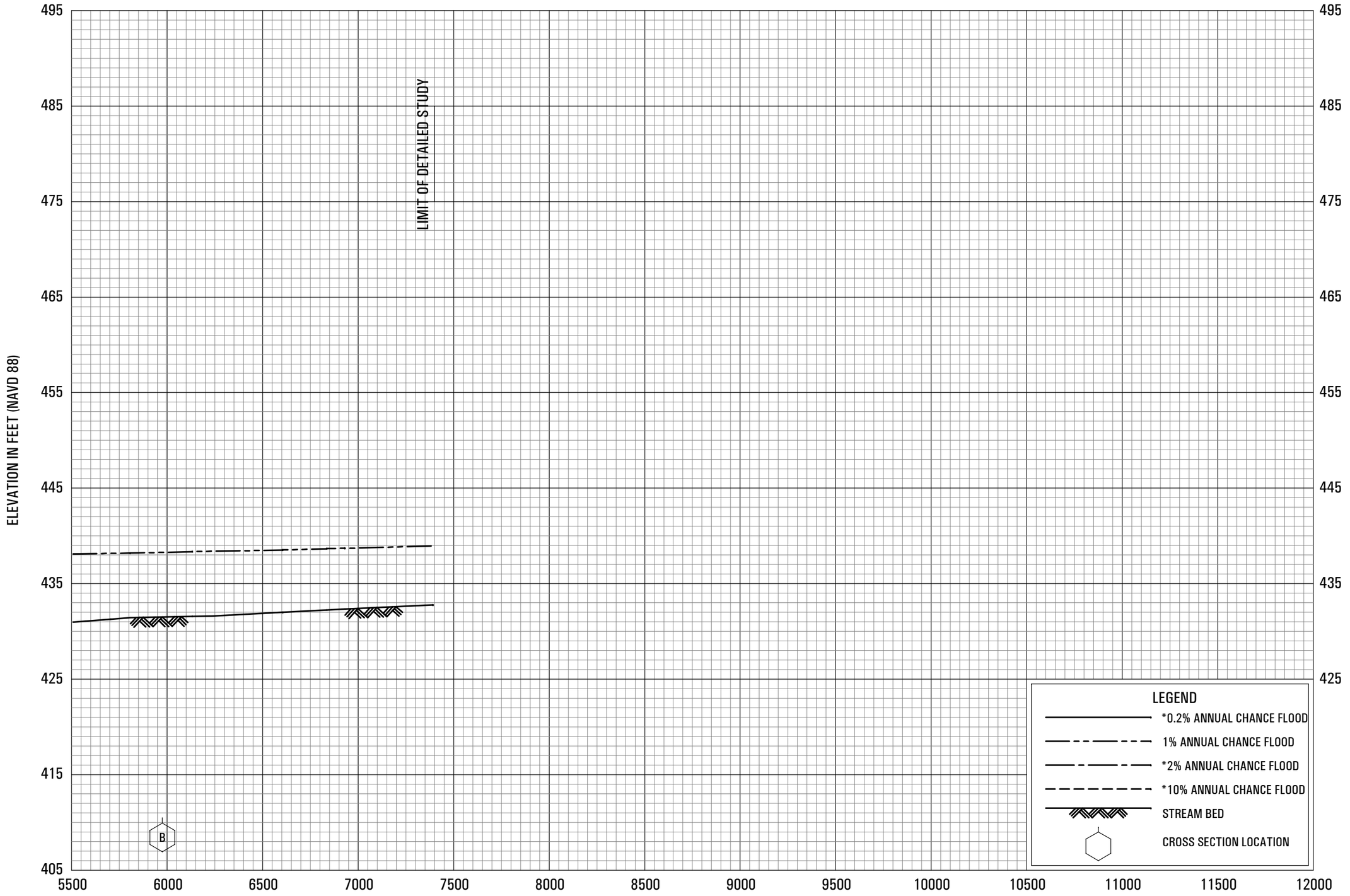
POND FLAT DITCH LATERAL "D"

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

046P



STREAM DISTANCE IN FEET IN FEET ABOVE CONFLUENCE WITH POND FLAT DITCH

* DATA NOT AVAILABLE

FLOOD PROFILES

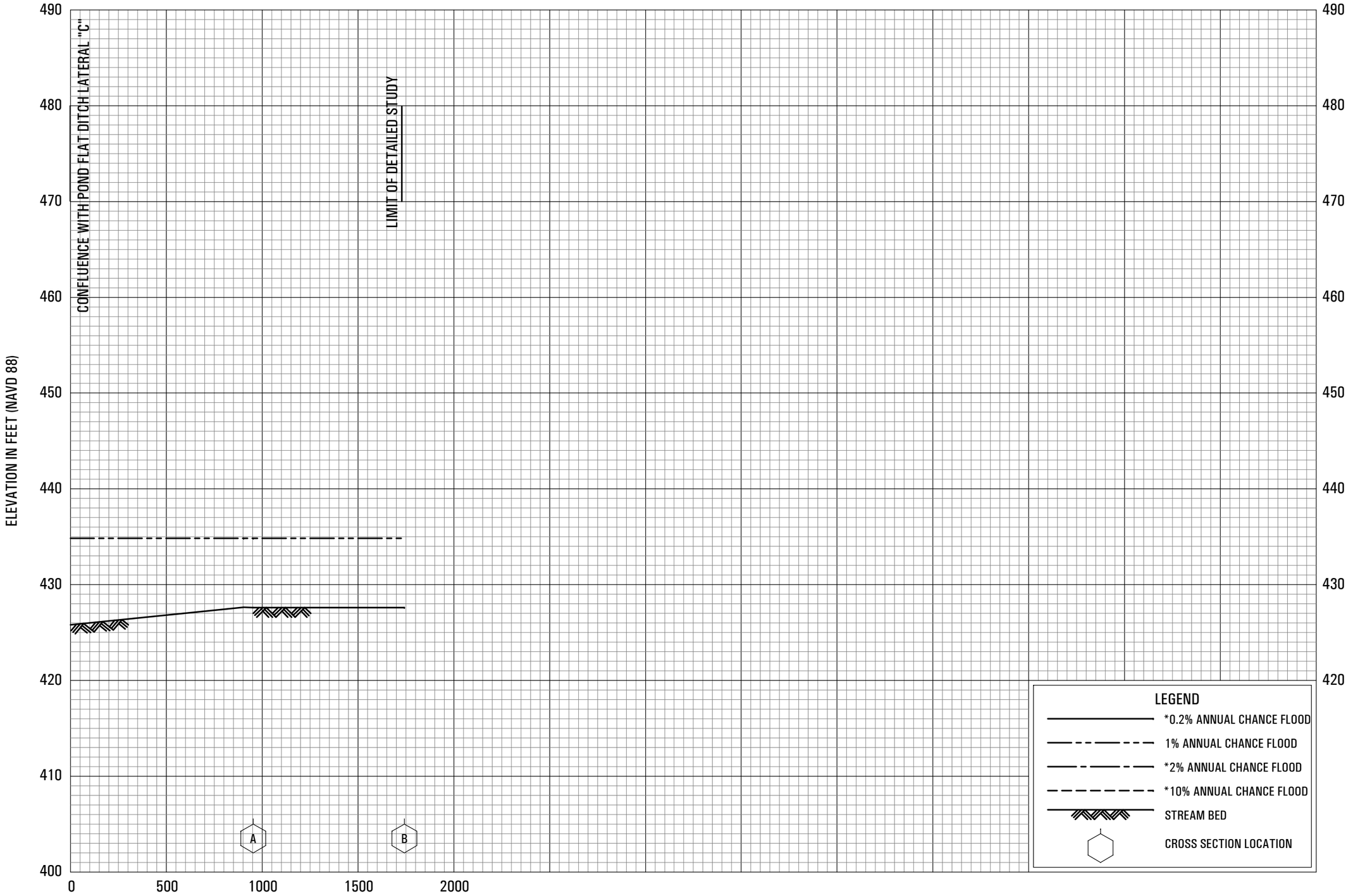
POND FLAT DITCH LATERAL "D"

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

047P



* DATA NOT AVAILABLE

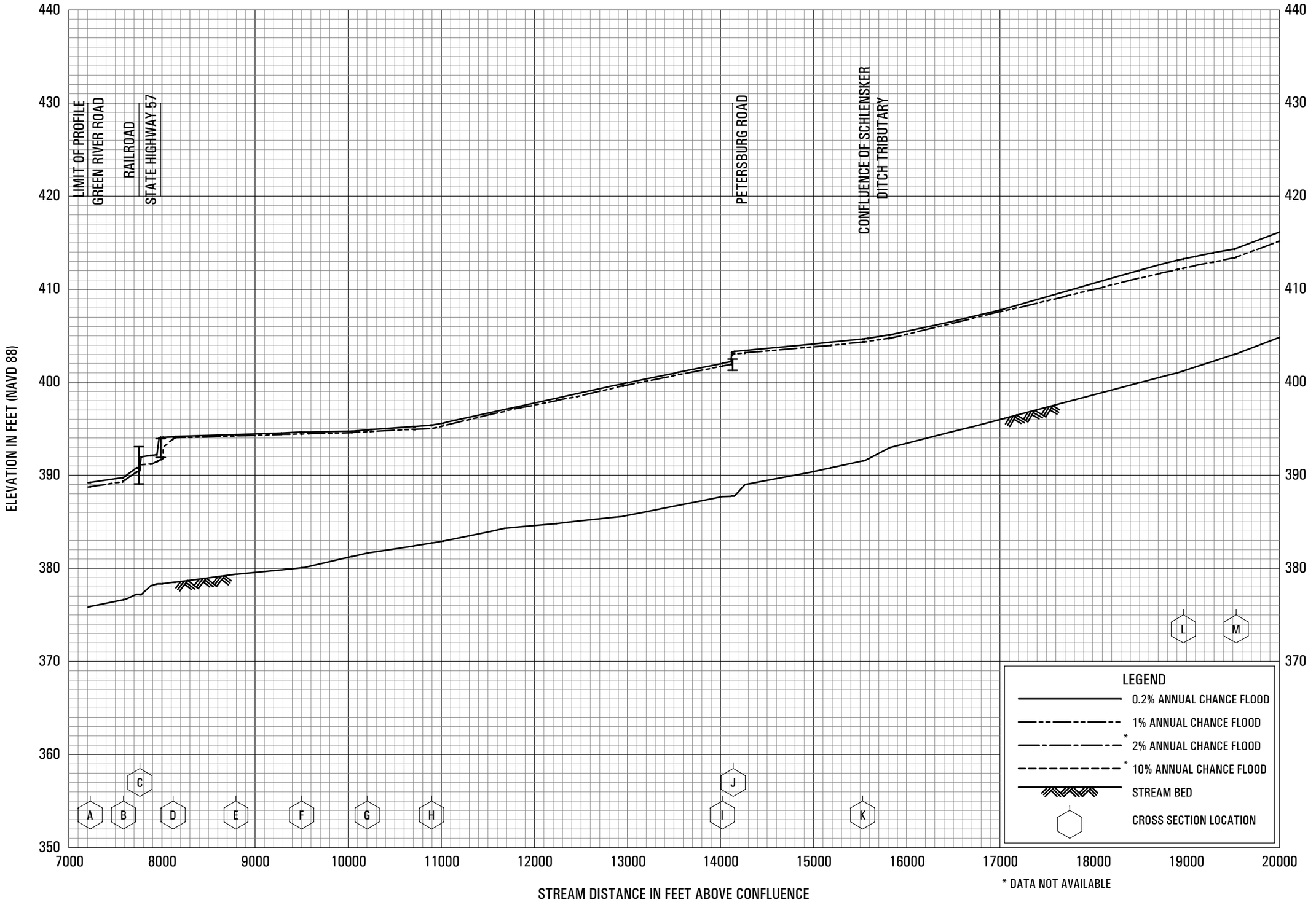
FLOOD PROFILES

POND FLAT DITCH LATERAL "E"

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS



* DATA NOT AVAILABLE

FLOOD PROFILES

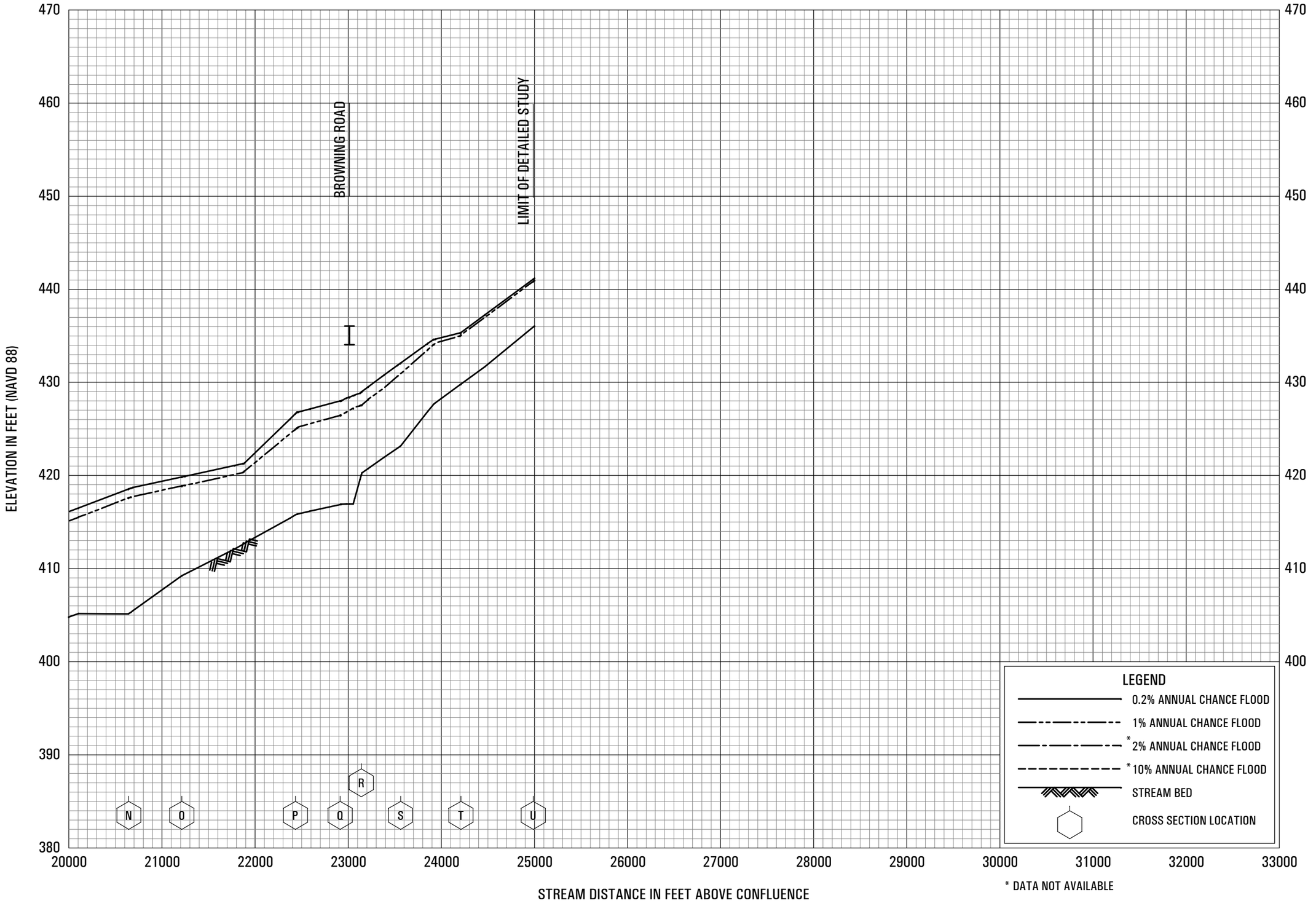
SCHLENSKER DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

049P



FLOOD PROFILES

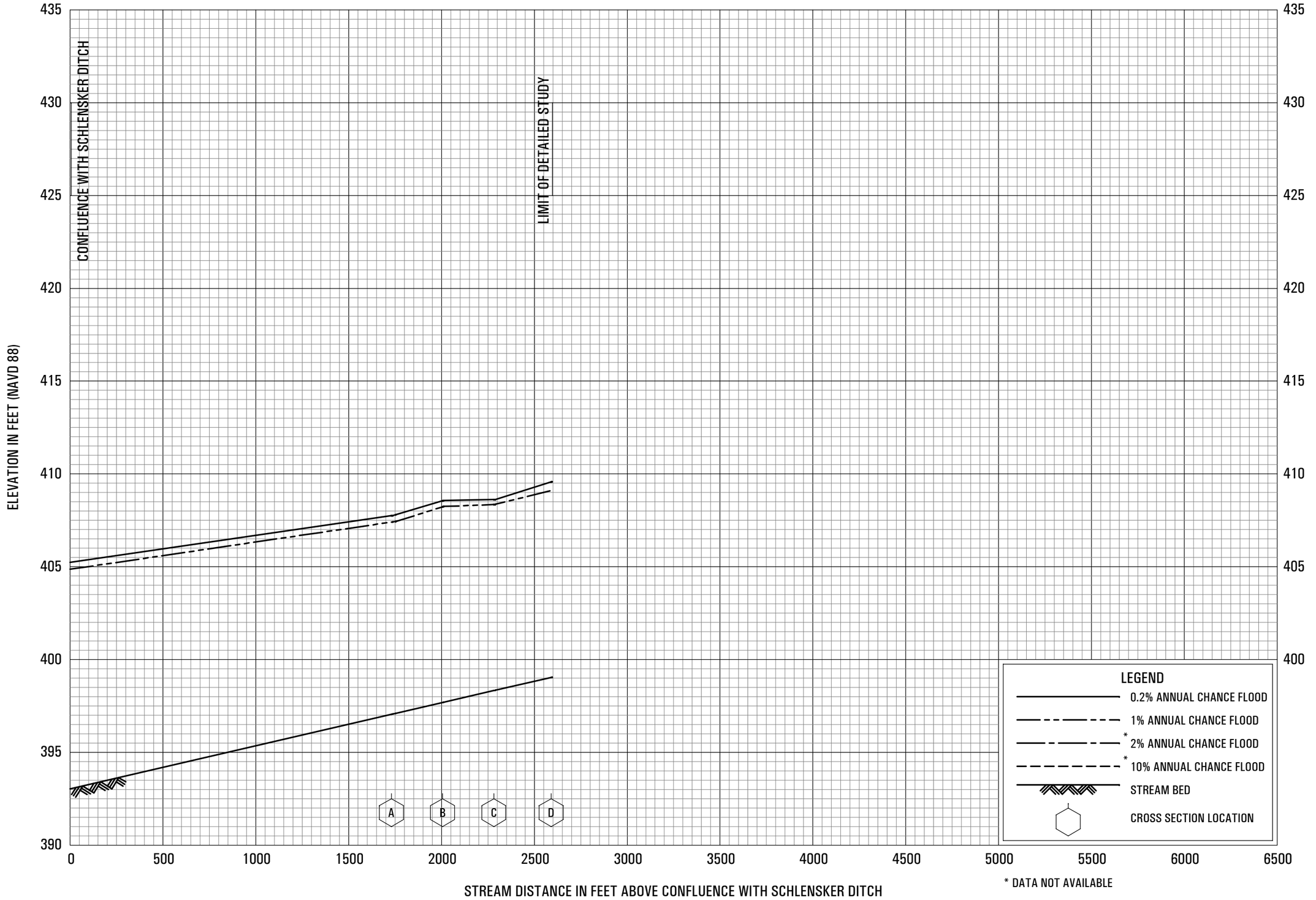
SCHLENSKER DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

050P



FLOOD PROFILES

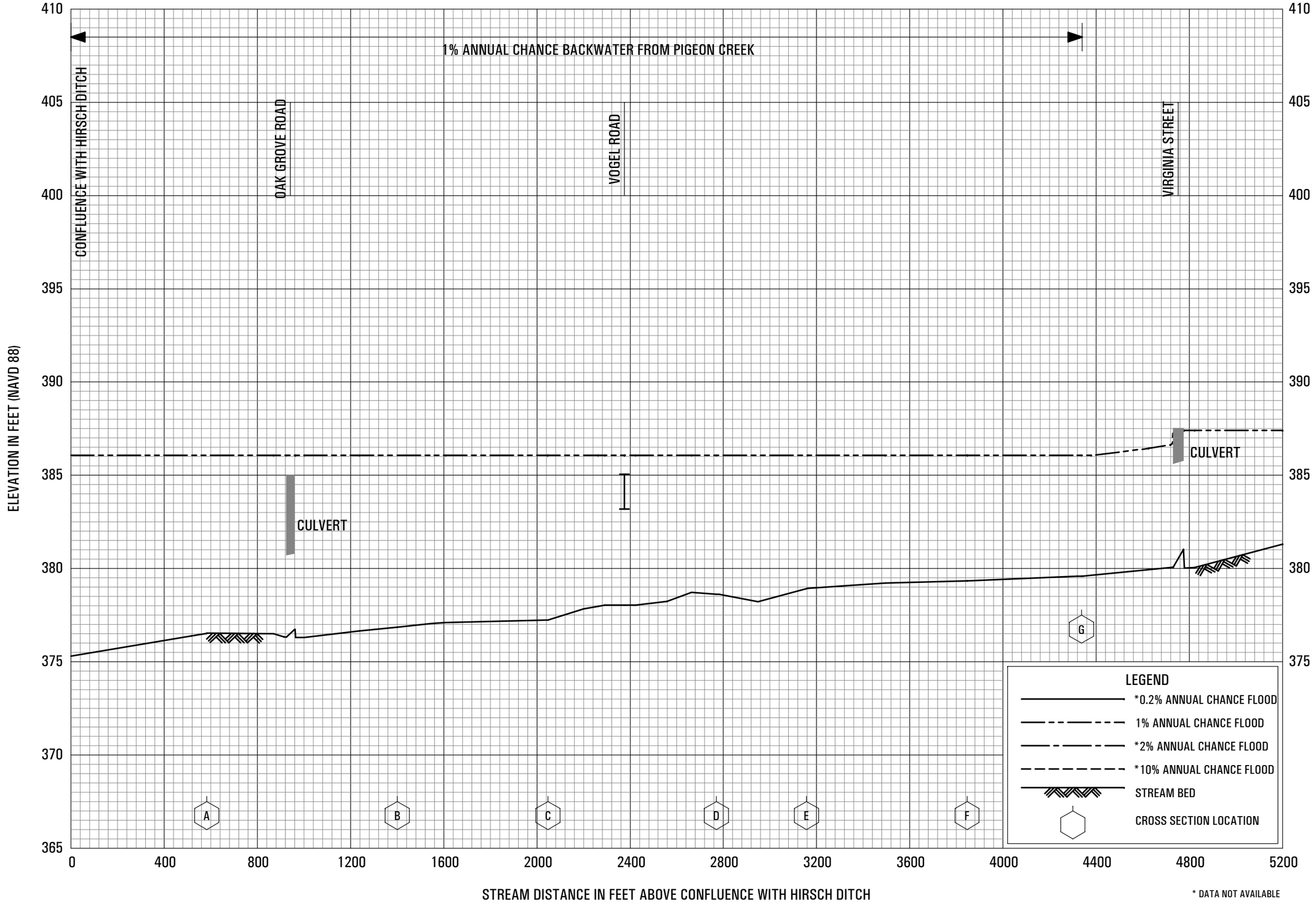
SCHLENSKER DITCH TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

051P



FLOOD PROFILES

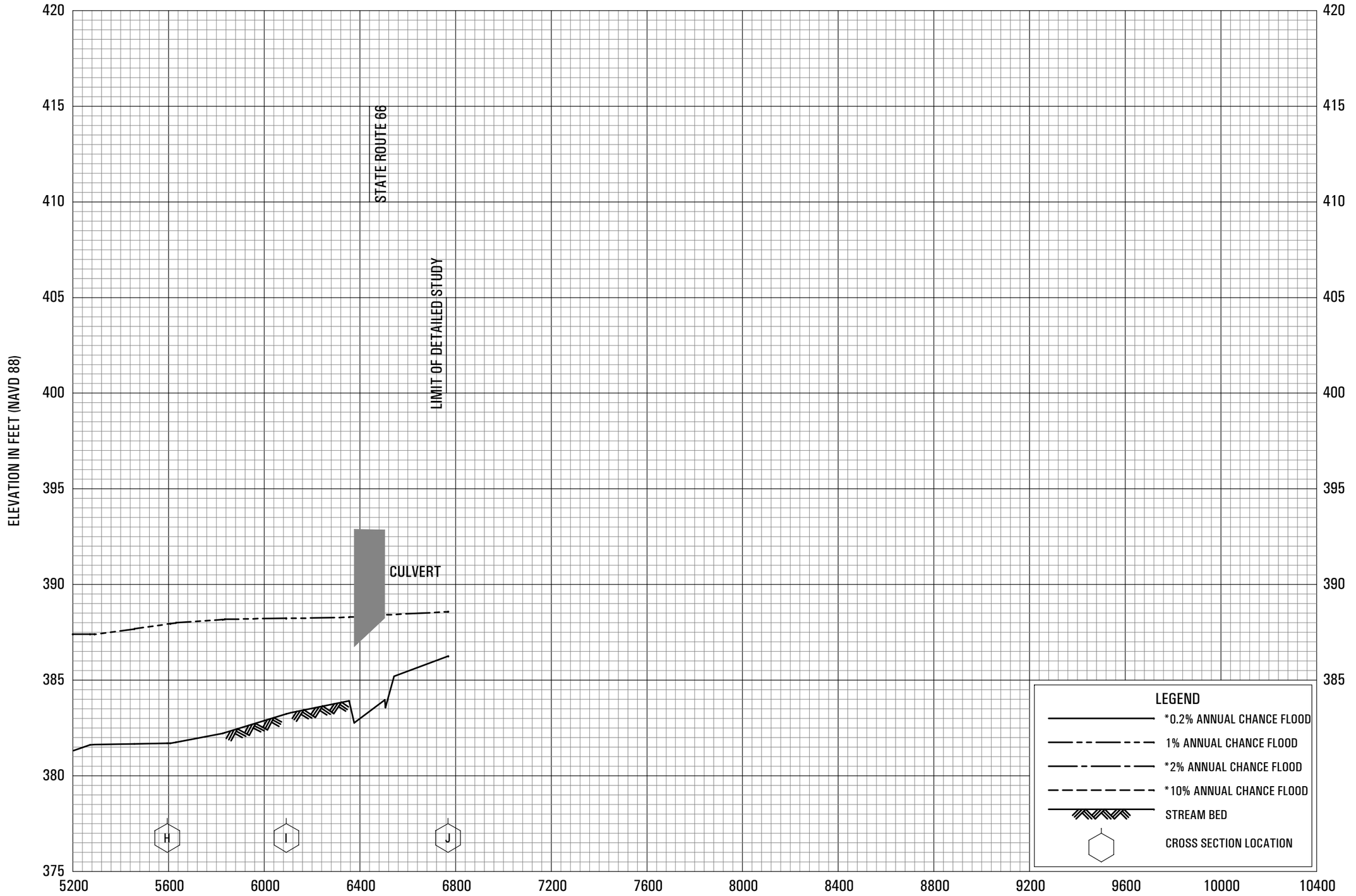
STOCKFLEITH DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

052P



FLOOD PROFILES

STOCKFLEITH DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

VANDERBURGH COUNTY, IN

AND INCORPORATED AREAS

053P